2. ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION

Introductory Note Regarding Mitigation and Avoidance Measures: *In accordance with Section 15143 of the CEQA Guidelines, the discussion in this EIR is focused on the significant effects on the environment resulting from the proposed General Plan Amendment and specific development projects. This EIR is identified as both a "program-level" document, and a "project specific" EIR. The proposed project includes various levels of entitlement that will occur over a relatively long period of time, and addresses impacts in varying degrees of specificity.*

The mitigation measures that are appropriate to the types of approvals being considered also differ in terms of their specificity and degree of entitlement and enforceability. While CEQA requires that mitigation measures should be "fully enforceable," it also acknowledges that impacts from adoption of a plan or policy can best be mitigated by measures incorporated into the plan or policy [Guidelines §15126.4(a)(2)].

While there are two specific development projects proposed at this time, the new General Plan and Zoning designations proposed for the overall project site are expected to be implemented and built-out over several years. General Plan policies are therefore the most relevant statement of how and to what degree impacts can be avoided or reduced, even though they are not project specific. General Plan policies represent the City's standards. For portions of the site where there is no specific site design developed at this time for the planned land uses, the City's adopted policies represent the most likely indication of what would be approved in the future.

Where it is possible or appropriate, some mitigation can be accomplished by other implementation policies, ordinances, or laws that are already in place. Like General Plan policies, this "program-level" mitigation is identified where it exists or is proposed for adoption.

Project-level mitigation and avoidance measures fall into one of two categories: 1) specific measures that are included in the project as proposed; or 2) specific measures that could reasonably be expected to reduce adverse impacts, but are not included in the project as proposed. The latter category is important because it provides information to decision makers regarding potential mitigation measures, which could be required as conditions of project approval.

2.1 LAND USE

2.1.1 Existing Setting

2.1.1.1 Existing Land Uses

The approximately 130-acre project site is located in the eastern portion of the City of Sunnyvale and is generally located south of U.S. Highway 101 (US 101) and west of Lawrence Expressway. The site is located between Duane Avenue and Stewart Drive and consists of 16 parcels (Assessor Parcel Numbers: 205-21-001, 205-21-002, 205-21-007, 205-21-008, 205-21-009, 205-21-010, 205-22-005, 205-22-014, 205-22-020, 205-22-021, 205-22-022, 205-22-023, 205-23-001, 205-23-002, 205-27-010, and 205-27-011).

The site is currently developed with a variety of industrial uses, landscaping, and surface parking lots, totaling approximately 1,486,879 square feet. The approximately 130-acre project site is currently designated *Industrial* in the City of Sunnyvale's General Plan and is zoned *M-S (Industrial and Service)*. This designation typically includes "light industrial" uses such as office support areas, research and development, product assembly, and warehousing. The project site area was primarily agricultural land until the 1950s and 1960s. At that time, the site was developed with a mix of commercial and industrial development. The site is currently occupied by Advanced Micro Devices (a manufacturer of microprocessors and flash memory devices), the Sunnyvale Technology Park offices, CarrAmerica, and several other industrial and office users.

AMD Duane Avenue Development Site

This property includes 920/948 East Duane Avenue and 1090 East Duane Avenue. Most of this property (1090 East Duane Avenue) is owned by AMD and consists of an open grass field, with mature landscaping trees along the perimeter. Pathways connecting the industrial offices to the west, south and east cross the southern portion of this site. A former gasoline service station (Jim's Exxon) occupies the northwestern corner (920/948East Duane Avenue) of this site.

Taylor Woodrow Duane Court Development Site

The Taylor Woodrow Duane Court development site consists of 1030, 1031, 1050, 1080, and 1095 East Duane Avenue and includes five multi-tenant industrial park buildings, which are identified as "Commerce Park." Four of the buildings consist of combination office and warehouse space, and one building is exclusively office space. Landscape trees are present along the perimeter, adjacent to the buildings, and within the parking lot areas on this site.

2.1.1.2 Surrounding Land Uses

The site is generally bounded by Duane Avenue to the north and northeast; Stewart Drive to the southeast and south; Wolfe Road to the southwest; and Fair Oaks Park, The King's Academy college preparatory middle and high schools, as well as the Rainbow Montessori preschool, to the west. Surrounding land uses include single family detached residences to the north, commercial uses to the east, commercial and industrial uses to the southeast and south and southwest. Residential apartments and commercial restaurants are also located to the east across Lawrence Expressway.

The San Miguel residential neighborhood is located north of the site, across Duane Avenue and south of US 101. Another residential neighborhood, the Lakewood Village area, is located east of Lawrence Expressway.

2.1.2 Land Use Impacts

2.1.2.1 Thresholds of Significance

For the purposes of this project, a land use impact is considered significant if the project would:

- Physically divide an established community; or
- Conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan; or
- Be incompatible with adjacent land uses or with the general character of the surrounding area, including density and building height; or
- Conflict with established residential, recreational, educational, religious, or scientific uses of an area; or
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use;
- Induce substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere; or
- Result in substantial shading of existing residences and/or a public park or open space area.

2.1.2.2 Land Use Conflicts

While this EIR evaluates both a policy level decision (revising the City's General Plan) and two specific development projects, the basic question of the suitability of the site for the proposed land uses must be determined during the General Plan decision-making process.

Land use conflicts can arise from two basic causes: 1) a new development or land use may cause impacts to persons or the physical environment in the vicinity of the project site or elsewhere; or 2) conditions on or near the project site may have impacts on the persons or development introduced onto the site by the new project. Both of these circumstances are aspects of *land use compatibility*. Potential incompatibility may arise from placing a particular development or land use at an inappropriate location, or from some aspect of the project's design or scope. Depending on the nature of the impact and its severity, land use compatibility conflicts can range from minor irritations and annoyances to potentially significant effects on human health and safety. The discussion below distinguishes between potential impacts *from the proposed project upon persons and the physical environment,* and potential impacts *from the project's surroundings upon the project itself.*

2.1.2.3 Land Use Compatibility Impacts of the General Plan Amendment and Specific Development Projects

The project proposes to amend the City's General Plan Land Use Map to change the land use and zoning designation on the site from *M-S (Industrial and Service)* to *Industrial-to-Residential (ITR)* in order to allow for the conversion and redevelopment of the site with residential uses. The ITR combining district designation on the site would allow for: the continuation or expansion of existing industrial and commercial uses; the construction of new medium- to high-density residential housing; or a combination of both.

The future residential development on the site would be medium-density and high-density residential units, in accordance with the City's *R-3 (Medium-Density Residential)* and *R-4 (High-Density Residential)* zoning districts. The R-3 zoning district allows up to 24 dwelling units per acre, and typically includes condominiums, townhouses, and apartments. The R-4 zoning district allows up to 36 dwelling units per acre, and typically includes condominiums/flats and apartments. (Refer to Figure 5 for the locations of the proposed R-3 and R-4 designations on the site.) Development of the residential uses on the site in accordance with Figure 5 would allow for up to 2,842 residential units to be constructed on the site.

Impacts to the Existing and Future Industrial Operations on the Site from the Presence of Future Residential Uses

The proposed ITR land use designation would allow a mix of residential, commercial, and industrial land uses to be combined on the project site. Uses allowed by the existing General Plan and zoning on this project site can and frequently do include outdoor activities, heavy truck use, hazardous materials delivery, use, and storage (refer to Section *2.5 Hazards and Hazardous Materials*), generation of noise, dust, odors, litter, and similar potential sources of annoyance to residential properties. Introducing residential populations into an established industrial area may result in complaints about noise, use of hazardous materials, and other byproducts of industrial operations. If complaints result in restrictions being placed on the industrial uses, this could create a land use conflict. Even when such complaints identify effects that are only annoyances (as opposed to threats to human health and safety), they must be resolved by oversight jurisdictions (which could include the City, County, Bay Area Air Quality Management District [BAAQMD], or other entities). Therefore, the proposed land use change and residential development projects could result in future limitations (such as restrictions on hours of operation, number of deliveries, etc.) being imposed on the existing or future industrial uses on the site. For instance, if the residential development occurs immediately, subsequent proposals to expand industrial uses on the site could face opposition from residents opposed to having industrial buildings near their homes.

It should be noted, however, that the existing industrial operations on the site are currently bordered by existing residences, to the north, across Duane Avenue. The proposed ITR designation requires project designs to conform to the standards in the zoning code, as well as the *Citywide Site Design Guidelines*, which require new projects to be compatible with their surrounding development in terms of intensity, setbacks, building forms, material, color, and landscaping, and to provide an appropriate transition between uses. Existing and future industrial uses on the site would also be required to conform to the City's *Industrial Design Guidelines*. These setbacks and design requirements would ensure that any future residential uses on the site would be set back from industrial operations per zoning district standards.

Adherence to these standards would minimize the potential for land use conflicts at the site; therefore, it is not anticipated that future residential land uses on the site would be incompatible with the existing and future industrial land uses. All required permits for hazardous materials will be reviewed and administered by the City in accordance with current codes and standards (refer to Section 2.5 Hazards and Hazardous Materials).

IMPACT LU-1: Development of residential uses on the site may result in land use conflicts with existing and/or future industrial operations on the site, and could result in future limitations on the industrial development remaining on the site. The proposed ITR designation, however, requires conformance with the development standards in the City's zoning code, as well as conformance with the *Citywide Design Guidelines* and *Industrial Design Guidelines*, to minimize the potential for land use conflicts between the existing industrial uses and new residential uses. Adherence to these standards will minimize the potential for land use conflicts at the site. All required permits for hazardous materials will be reviewed and administered by the City in accordance with current codes and standards. (Less Than Significant Impact)

Impacts to Future Residential Uses from Ongoing Industrial Operations at the Site

Developing residential land uses near established industrial uses on the site could expose future residents to impacts from truck traffic, operation of heavy equipment, proliferation of parked and stored vehicles, outdoor lighting, dust and litter, noise, and the use of hazardous materials. The potential air emissions, noise, and hazardous materials impacts on future residents, and the mitigations for them, are discussed in Sections *2.7 Air Quality*, *2.8 Noise*, and *2.5 Hazards and Hazardous Materials* of this EIR.

Future residents in the developments proposed on the site may experience occasional disturbance and annoyances from spillover effects from the remaining and/or future industrial uses at the site. Complaints about equipment, parking, lighting, nighttime operations, dust and litter, may result in limitations on these industrial businesses. The setback, design, and operational requirements of the Municipal Code and Citywide Design Guidelines, should minimize both the severity and the frequency of such complaints.

As described above, the proposed project includes design guidelines and setbacks between the existing and future industrial development and the new residential and commercial development on the site, in order to minimize the potential for conflicts between industrial and residential land uses. In addition, the project specifically proposes to adhere to the City's *Industrial Design Guidelines* and *Citywide Design Guidelines*. Any new or expanded industrial development would also adhere to the City's *Industrial Design Guidelines*.

In addition, the ongoing use, storage and delivery of hazardous materials to industrial uses on the site would continue to adhere to the various local, state, and Federal requirements, including the City of Sunnyvale Fire Code, the California Code of Regulations, and the National Fire Protection Association's Flammable and Combustible Liquids Code (refer to Section *2.5 Hazards and Hazardous Materials* of this EIR).

The existing and future industrial uses on the site will continue to use hazardous materials. No restrictions are proposed by this project on the types, quantities, or locations of hazardous materials that may be stored at, used on, or transported on and off the remaining industrial

properties. Hazardous materials may, therefore, be used and kept on the site in sufficient quantities that their accidental release could result in off-site consequences. The impacts that could result from such a release on sensitive receptors that would be located immediately adjacent to the industrial areas on this site are discussed in Section 2.5 *Hazards and Hazardous Materials* of this EIR.

IMPACT LU-2: Given the proposed separations between the residential and industrial areas, as well as conformance with the setback and design requirements of the City of Sunnyvale and other local, state, and Federal regulations, the project is not anticipated to result in significant impacts to the proposed residential and commercial uses as a result of normal industrial operations on the site. (Less Than Significant Impact)

2.1.2.4 Population and Housing Impacts

Currently, the City of Sunnyvale has a "surplus" number of jobs compared to the number of housing units located within the City. As described in Section *1. Description of the Project*, the project proposes an amendment to the General Plan to change the land use designation on the site from *M-S (Industrial and Service)* to *Industrial-to-Residential (ITR)* in order to allow for the conversion and redevelopment of the site with residential uses. Therefore, the proposed project would allow for development of residential uses, helping to meet the City's housing needs.

Impacts associated with adding housing and increasing population include increased energy usage, traffic and circulation impacts, utility impacts, and availability of public services. These impacts are discussed in their relevant sections (*Sections 2.12 Energy, 2.3 Transportation, 2.11 Utilities and Service Systems, and 3. Availability of Public Services).*

IMPACT LU-3: The change in land use to allow residential development to occur on the site is anticipated to result in beneficial impacts to the City's jobs and housing balance. (Beneficial Impact) The environmental impacts resulting from increased demand for utilities and services are evaluated in Sections *2.11 Utilities and Services*, *2.12 Energy*, and *3. Availability of Public Services* of this EIR.

2.1.2.5 Shade and Shadow Impacts

Under the current General Plan and zoning designation on the project site, the maximum allowed building height is 75 feet, plus an additional 25 feet for towers, spires, machinery penthouses not exceeding 25 percent of the roof area on which a penthouse is located, scenery lofts, cupolas, water tanks, telecommunications facilities, and similar architectural and utility structures including equipment screening (Municipal Code 19.32.030). The existing industrial and office buildings on the site range from approximately 25 to 55 feet in height.

The City's Municipal Code specifies that no building permit shall be issued for any construction that would shade or create shadow on more than 10 percent of the rooftops of adjacent residential buildings during 9 AM to 3 PM (Municipal Code 19.56.020). Under the ITR combining district designation, the maximum allowable building heights would be similar to those currently existing and allowed at the site. In addition, the two specific development projects propose building heights similar to those existing on the site. The development proposed on the AMD property would have a maximum building height of 36

feet. The tallest structures proposed as part of the specific development projects would be the podium condominium buildings proposed between Duane Court and East Julian Avenue. These buildings would have a maximum height of up to 55 feet. These structures would be located on the southeastern portion of that site. The proposed residential buildings would **not** cast shadows extending to the single-family neighborhood on the north side of Duane Avenue or Duane Court. For these reasons, the proposed land use change and the proposed development projects would not result in significant shade and shadow impacts.

IMPACT LU-4: The size and scale of the proposed structures on the site would be compatible with the surrounding land uses in the project area and would not result in shading impacts on the existing residential uses near the site. (Less Than Significant Impact)

2.1.2.6 Construction and Demolition Impacts from Specific Development Projects

Demolition of the existing buildings on the site and construction of the proposed residential developments would involve earthmoving, grading, delivery of construction materials, and the construction itself with the use of power equipment, concrete trucks, and other sources of noise, dust, and traffic. In addition, redevelopment of the overall project site is anticipated to require a substantial amount of truck and vehicle trips to and from the site during all phases of demolition and construction activities. Environmental impacts would include increased noise and dust from construction equipment, disruption of local traffic circulation, generation of additional air emissions, and hazards to pedestrians. While construction impacts are temporary in nature and can be reduced in their severity, given the size of this project, construction is anticipated to occur over the next five to ten years.

The demolition and construction activities would create at least annoyance-level disturbances for the nearby land uses, particularly for the land uses adjacent to the site, including the residences to the north. Even though the impacts would be temporary, the combination of noise, dust and vehicular activities over such an extended time period would constitute a significant change in conditions, and could be significantly disruptive.

IMPACT LU-5: Construction activities would result in significant physical disturbance, and could cause temporary disruption to adjacent land uses, including the existing residential uses to the north. (Significant Impact)

2.1.3 Introduction to Program-Level and Project-Specific Mitigation and Avoidance Measures

Mitigation and avoidance measures identified in this and subsequent sections of this EIR include both program-level measures and project-specific measures. This is necessary because the project evaluated in this EIR includes amendments to the City's adopted General Plan (i.e., program-level analysis) and two specific development projects (project-level analysis).

Once approved, a General Plan amendment, particularly a change in the land use designation on a piece of property, will continue to be in effect, independent of any associated PD Zoning and whether or not a particular property owner chooses to implement it at any particular point in time. The General Plan is a long range planning document; its policies identify the standards and goals that are to guide individual near term development, but its implementation is the responsibility of the City as a whole, not individual property owners. An amendment to the General Plan cannot be conditioned, even for environmental mitigation. Implementation of the General Plan, however, can be assumed in the context of all of its policies and programs and in the context of other ordinances, laws, and adopted policies.

Each subsection of this EIR identifies the specific policies and goals in the General Plan that establish the standards for particular categories of mitigation, or which address the types of measures that would be assumed to avoid impacts. In some cases, the *Mitigation and Avoidance* subsections will also include adopted policies, existing ordinances or laws, or other programmatic mitigation measures that are in place and which can reasonably be assumed to be the source of future mitigation or avoidance measures. Should the currently proposed projects not be implemented, other future development proposed under the *ITR* designation would be evaluated for conformance with these General Plan goals and policies, as well as other adopted policies, ordinances and laws, and may or may not result in impacts similar to those from the proposed development projects.

The City does not adopt reporting programs for individual General Plan amendments, but reports on the status of its General Plan in conformance with State law [CEQA Guidelines §15097(b)].

After identification of General Plan policies and other program-level measures, the *Mitigation and Avoidance* subsections in this EIR will discuss specific project-level mitigation and avoidance measures that are included in the project as it is proposed or that the City of Sunnyvale has determined could reasonably be expected to reduce adverse impacts.

2.1.4 General Plan Policies and Actions

The policies and actions of the City of Sunnyvale General Plan have been adopted for the purpose of avoiding or mitigating potential environmental effects resulting from planned development within the City. The City of Sunnyvale General Plan *Land Use and Transportation Element* (adopted 1997) contains policies and action statements related to land use, transportation, community character, and neighborhoods. Conformance with the following General Plan policies and actions from the Land Use and Transportation Element will reduce or avoid land use impacts:

Transportation Action Statement R1.3.2 promotes shorter commute trips and ease congestion by advocating that all communities provide housing and employment opportunities.

Transportation Policy R1.7 states that the City should contribute to efforts to minimize region-wide average trip length, and single-occupant vehicle trips.

Community Character Goal C1 calls for the City to preserve and enhance an attractive community, with a positive image and a sense of place, that consists of distinctive neighborhoods, pockets of interest, and human-scale development.

Strong Economy Policy C4.1.3 promotes commercial uses that respond to the current and future retail service needs of the community.

The Neighborhoods Policy N1.2 requires new development to be compatible with the neighborhood, adjacent land uses, and the transportation system.

The Neighborhoods Action Statement N1.2.1 states that the City should integrate new development and redevelopment into existing neighborhoods.

The Neighborhoods Action Statement N1.2.2 states that the City should utilize adopted City design guidelines to achieve compatible architecture and scale for renovation and new development in Sunnyvale's neighborhoods.

The Neighborhoods Action Statement N1.2.3 states that the City should develop specific area plans to guide change in neighborhoods that need special attention.

Community Design Action Statement 2.5C.5f states that the City should encourage new construction to be designed so that it minimizes the impact on the privacy of adjoining residential properties.

2.1.5 Mitigation and Avoidance Measures

The following mitigation measure is included in the two specific development project zonings, and will reduce or avoid impacts to sensitive land uses during ongoing construction on the site:

- The applicants shall implement a Construction Management Plan, for all development within 1,000 feet of occupied residential uses, approved by the Director of Community Development to minimize impacts on surrounding sensitive land uses, particularly the residences across Duane Avenue, as well as the future residences on the project site itself, to the fullest extent possible. The Construction Management Plan shall include the following measures to minimize the impacts of construction upon adjacent land uses:

    - Measures to control dust, noise and water pollution result from construction activities.
    - Measures to keep all streets and public ways clean of debris, dirt, dust and other undesirable outcomes of construction (see *Section 2.7 Air Quality* of this EIR).

- Measures to control noise by limiting hours of operation of construction activities, avoiding more sensitive early morning and evening hours, and scheduling equipment selection (see *Section 2.8 Noise* of this EIR).
- Selection of access routes for trucks delivering materials to and from the site which minimize neighborhood disturbance.

2.1.6 Conclusion

LU-1 Development of the project, as proposed, would not result in significant land use conflicts with and/or significant future limitations on the existing or future industrial development remaining on the site. **(Less Than Significant Impact)**

LU-2 The proposed General Plan land use designation is not anticipated to result in exposure of future residents or others to significant impacts from normal industrial activities associated with the remaining industrial development with implementation of the mitigation identified for residential development and adherence to current state, Federal, and local standards for hazardous materials. **(Less Than Significant Impact)**

LU-3 The change in land use to allow residential development to occur on the site is anticipated to result in beneficial impacts to the City's jobs and housing balance. **(Beneficial Impact)**

LU-4 The size and scale of the proposed structures on the site would be compatible with the surrounding land uses in the project area and would not result in shading impacts on the existing residential uses near the site. **(Less Than Significant Impact)**

LU-5 Implementation of the mitigation measure identified above, as well as conformance with the above General Plan polices and mitigation measures identified in *Sections 2.8 Noise, 2.10 Visual and Aesthetics, and 2.7 Air Quality*, will reduce impacts upon nearby land uses from construction activities and physical disturbance to a less than significant level. **(Less Than Significant Impact with Mitigation Incorporated)**

2.2 GEOLOGY AND SOILS

The following discussion of the geologic features, soils, and seismic conditions on the project site is based on the Cooper-Clark *Geotechnical Investigation for the City of Sunnyvale Sphere of Influence* (1974), the USGS *Generalized Geologic Map* (1975), the County of Santa Clara, Department of Public Works soil map sheet 12N/03 E 11 (1964), and the USDA *Soils of Santa Clara County* (1968). A geotechnical feasibility investigation was also completed by *Lowney Associates* in January 2006. The complete investigation is included in Appendix B of this EIR.

2.2.1 Setting

2.2.1.1 Topography and Soils

Sunnyvale lies at the southern end of San Francisco Bay and is built atop the alluvial deposits that surround the margins of the Bay. Sunnyvale's topography is generally flat, gradually dropping from an elevation of 300 feet to sea level. Sunnyvale's soil is largely composed of expansive clays. Expansive clays are a poor foundation material because they swell when wet and shrink when dry, producing extensive cracks.

The surface soils on the site consist of stiff to hard clay with a moderate to high expansion potential. The surface layer of soil is underlain by medium to very stiff clay deposits with a low to moderate expansion level and medium to very dense fine-grained sands up to 120 feet in depth below the surface. Various types of very stiff sand deposits and medium to high density clay deposits extend to depths in excess of 500 feet.

The site appears to be relatively level, with approximately 18 feet of topographic relief sloping down from the southwest to northeast corners of the property.

Ground water in the project area has been encountered at depths ranging from approximately 7.5 feet to 14.5 feet below the ground surface. Fluctuations in the level of the ground water may occur due to variations in rainfall, underground drainage patterns, and other factors.

2.2.1.2 Seismicity and Seismic Hazards

The City of Sunnyvale is located within Santa Clara County, which is part of the seismically active San Francisco Bay Area. It is classified as Zone 4, the most seismically active zone in the United States. An earthquake of moderate to high magnitude generated within the San Francisco Bay region could cause considerable ground shaking at the project site. The degree of shaking is dependent on the magnitude of the event, the distance to its zone of rupture and local geologic conditions.

The site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone, nor is it located within a Fault Rupture Hazard Zone as designated by Santa Clara County. Since no known active faults cross the site, fault rupture through the site is not anticipated.

The major fault lines in the region are the San Andreas Fault and the Hayward Fault. The San Andreas Fault is located approximately 10 miles southwest of the project site and the Hayward Fault is located approximately 10 miles to the northeast of the project site. Other active faults in the site region are the potentially active Monte Vista-Shannon Fault, located approximately seven miles southwest of the site, the Hayward Southeast Extension, located

approximately eight miles northeast of the site, and the Calaveras Fault, located approximately 11 miles northeast of the site. Because of the proximity of the site to these faults, any ground shaking, ground failure, liquefaction, or lateral spreading due to an earthquake could cause damage to structures.

Ground Shaking

Ground shaking is the most widespread effect of an earthquake. The sudden release of energy in an earthquake causes waves to travel through the earth. These waves not only shake structures to the breaking point, but can trigger secondary effects such as landslides or other types of ground failure. Strong ground shaking can be expected at the site during moderate to severe earthquakes in the general region. This is common to all developments in the San Francisco Bay Area.

Given the flat nature of the site, landslide potential on the site is low.

Ground Failure

Most ground failure from earthquake shaking results in displacement in the surface due to loss of strength of underlying materials. The various types of ground failure include landsliding, liquefaction, lateral spreading, lurching, and differential settlement. These effects usually occur in soft, fine-grained, water-saturated alluvium, as generally found in the Santa Clara Valley. Due to the type of soils on the site, ground failure potential at the site is low.

Liquefaction

Liquefaction is the result of seismic activity and is characterized as the transformation of loosely water-saturated soils from a solid state to a liquid state after ground shaking. There are many variables that contribute to liquefaction including the age of the soil, soil type, soil cohesion, soil density, and ground water level. Soils most susceptible to liquefaction are loose to moderately dense, saturated non-cohesive solids with poor drainage.

The site is located within an area zoned by the State of California as having potential for seismically induced liquefaction hazards and is located in a Santa Clara liquefaction hazard zone.

Differential Seismic Compaction

If near-surface soils vary in composition both vertically and laterally, strong earthquake shaking can cause non-uniform compaction of soil strata, resulting in movement of near-surface soils. The subsurface soils encountered in the project area are generally stiff to very stiff clays and loose to very dense sands.

Lateral Spreading

Lateral spreading failures occur most commonly on gentle to nearly horizontal slopes underlain by loose to moderately dense granular deposits or layers. The horizontal movement of the slightly sloping material towards a "free" face such as an open body of water, channel or excavation can prove to be damaging and disruptive to structures and utilities.

Since there are no creeks or open bodies of water within a reasonable distance of the site, the event of lateral spreading occurring during a seismic event is low.

2.2.2 Geology and Soils Impacts

2.2.2.1 Thresholds of Significance

For the purposes of this project, a geologic or seismic impact is considered significant if the project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault,
  - Strong seismic ground shaking,
  - Seismic-related ground failure, including liquefaction, and/or
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

2.2.2.2 Impacts from the General Plan Amendment and Specific Development Projects

Expansive Soils

Future development on the site is not expected to be exposed to slope instability, erosion, or landslide-related hazards, due to the relatively level topography of the site. The project site includes highly expansive soils, which may expand and contract as a result of seasonal or man-made soil moisture conditions. Expansive soil conditions could potentially damage the future buildings and improvements on the site which would represent a significant impact unless substantial damage is avoided by incorporating appropriate engineering into grading and foundation design.

Standard Requirements

The project would be required to be constructed in accordance with the standard engineering practices in the Uniform Building Code, which would ensure that future buildings on the site are designed properly to account for the expansive soils on the site. The presence of expansive soils on the site, therefore, would not represent a significant impact to future development on the site.

IMPACT GEO-1: Due to the expansion potential of the soils on the site, the project could expose people and structures to significant geological hazards. However, implementation of standard grading and best management practices (BMPs) would prevent soils conditions on the site from significantly impacting future development. Slabs-on-grade will be required to be supported on a layer of non-expansive fill (NEF) and footings will be required to extend below the zone of seasonal moisture fluctuation. An alternative to structures with footings and slabs-at-grade over NEF would be post-tensioned mat foundations. These standard measures would provide sufficient reinforcement from geological hazards. (Less Than Significant Impact)

Undocumented Fill

Undocumented fill is likely present at developed portions of the project site. Undocumented fill may impact surface improvements such as sidewalks and at-grade pavement areas, as well as structure foundation areas. If undocumented fills are removed and replaced as engineered fill and shallow loose sands, if encountered, are mitigated in conformance with standard engineering practices, the potential for differential seismic compaction at the site would be low.

IMPACT GEO-2: In accordance with standard engineering practices, the undocumented fill on the site would be removed and replaced with engineered fill. Therefore, these materials would not impact future development on the site. (Less Than Significant Impact)

Shallow Ground Water

A survey of ground water levels within the project site show existing levels between seven (7) and 14.5 feet below the surface, with seasonal fluctuations. These levels of ground water are shallow enough to impact below-grade construction due to wet and unstable subgrade soils, water permeation into foundations and difficulty installing underground utilities. Preventative measures should be taken if excavations will extend near or below the ground water level, or if building loads are significant enough to cause foundation settlement reaching ground water. For example, raising structures so foundations provide three to four feet of elevation between building footings and ground water would reduce the need for specialized foundation systems such as strip footing, mat foundations or deep foundations. If excavations extend below the ground water level soils may need to be stabilized and/or dewatered to facilitate placement and compaction of structures and fill. Performing one or more of these engineering standards would prevent shallow ground water intrusion to a future development.

IMPACT GEO-3: Incorporation of standard engineering design and standards would prevent shallow ground water intrusion to future development on the site. (Less Than Significant Impact)

Seismicity and Seismic Hazards

As previously discussed, the project site is located in a seismically active region, and therefore, strong ground shaking would be expected during the lifetime of the proposed project. While no active faults are known to cross the project site, ground shaking on the site could damage future buildings and other structures, and threaten the welfare of future patrons and residents. There is a moderate to high risk that liquefaction will occur during strong seismic shaking.

Standard Requirements

The proposed project would be designed and constructed in conformance with the Uniform Building Code guidelines for Seismic Zone 4 to avoid or minimize potential damage from seismic shaking and seismic-related hazards, including liquefaction, on the site. Potential impacts associated with future exposure to the proposed project, therefore, would be reduced or avoided by conformance with the standards specified in the Uniform Building Code for Seismic Zone 4. For this reason, the project would not be subject to significant impacts from seismic-related hazards.

IMPACT GEO-4: There is a strong potential for seismic ground shaking and liquefaction to occur on the site. Potential seismic impacts to the proposed project would be reduced or avoided by conformance with the standard engineering practices and techniques specified in the Uniform Building Code for Seismic Zone 4. (Less Than Significant Impact)

2.2.3 General Plan Policies

The City of Sunnyvale General Plan *Community Development Element, Safety and Seismic Safety Sub-Element* (adopted 1993) contains the following policies and action statements related to soils, geology, and seismicity:

Policy A1: Evaluate and consider existing seismic potential hazards in developing land use policies. Make land use decisions based on an awareness of the hazards and potential hazards for the specific parcel of land.

Policy A.5: Maintain lifelines [essential services] in good operating condition to lessen damage and increase survivability after a major disaster.

Policy B.2: Provide for the emergency management of the City in order to protect life and property in the event of a disaster.

Policy B.5: Provide information to business and industry to plan and prepare for emergencies and disasters.

Action Statement B.5.1: Provide available emergency preparedness information to businesses and industries that request assistance.

Action Statement B.5.2: Encourage business and industry to plan for recovery from catastrophic events.

2.2.4 Mitigation and Avoidance Measures

The project proposes the following standard measures:

STANDARD MEASURE GEO-1: Detailed design-level geotechnical investigations shall be completed for each future development project on the site and the project designs and construction shall follow the recommendations of the investigations. The design-level investigations shall include subsurface exploration at the site (to address the liquefaction potential at the site) and evaluation of appropriate foundation systems for proposed structures, as well as site preparation and pavement design.

STANDARD MEASURE GEO-2: Due to the depth of ground water in the project area, the design-level investigations will also address any need for stabilization and/or dewatering during construction. If dewatering is required, these reports will also identify the amount and depth of dewatering and the specifics regarding disposal of the water.

2.2.5 Conclusion

GEO-1: Implementation of standard grading and best management practices (BMPs) and the implementation of the recommendations in the feasibility investigation and in the design-level geotechnical investigations to be prepared for the future development projects, would prevent soils conditions on the site from significantly impacting future development. **(Less Than Significant Impact with Standard Mitigation Incorporated)**

GEO-2: In accordance with standard engineering practices, the undocumented fill on the site would be removed and replaced with engineered fill. Therefore, these materials would not impact future development on the site. **(Less Than Significant Impact with Standard Mitigation Incorporated)**

GEO-3: Incorporation of standard engineering design and standards would prevent shallow ground water intrusion to a future development on the site. **(Less Than Significant Impact with Standard Mitigation Incorporated)**

GEO-4: Potential seismic impacts to the proposed project would be reduced or avoided by conformance with the standard engineering practices and techniques specified in the Uniform Building Code for Seismic Zone 4. **(Less Than Significant Impact with Standard Mitigation Incorporated)**

2.3 HYDROLOGY AND WATER QUALITY

2.3.1 Setting

2.3.1.1 Hydrology and Drainage

The project site is located between Sunnyvale East Channel and Calabazas Creek within the Santa Clara Valley Water District's "West Valley Watershed." There are no waterways present on the site. The nearest waterway is Calabazas Creek, approximately 0.5 miles to the east of the project site. The storm drainage system funnels runoff to Duane Avenue and Lawrence Expressway where 42-inch drain leads to a 72-inch drain in Lakeside Drive. Runoff from the site eventually drains to Calabazas Creek. The site consists of 83 percent impervious surfaces and 17 percent pervious surfaces.

2.3.1.2 Flooding

During extreme runoff events, the northwesterly portion of the project area is subject to shallow overland flooding from Sunnyvale East Channel overflow. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, the eastern portion of the site is located within Zone AO, meaning a 100-year flood depth is expected to cause flooding averaging 1.5 feet. The central northern to southwestern portion of the site is within the Santa Clara Valley Water District's "daylight" limit of flooding, or flooding with depths between zero and one foot. The two specific project sites (AMD and Taylor-Woodrow) location on the eastern portion of the site do not fall within either of the regulatory flood hazard zones.

According to the San Francisco County Office of Emergency Services and Homeland Security (2005) tsunami hazard map, Sunnyvale is not threatened by tsunami. The area is also not subject to tidal action.

2.3.1.3 Water Quality

The water quality of streams, creeks, ponds, and other surface water bodies can be greatly affected by pollution carried in contaminated surface runoff. Pollutants from unidentified sources, known as "non-point" source pollutants, are washed from streets, construction sites, parking lots, and other exposed surfaces into storm drains. Storm water runoff from the road is collected by storm drains and discharged into Calabazas Creek. The runoff often contains contaminants such as oil and grease, plant and animal debris (e.g., leaves, dust, animal feces, etc.), pesticides, litter, and heavy metals. In sufficient concentration, these pollutants have been found to adversely affect the aquatic habitats to which they drain.

The project site is also located at the northern end of an area where chemical impacts to ground water have occurred, primarily as a result of chemical releases from five National Priority List (NPL/Superfund) sites within or near the project site, including: *AMD* at 915 DeGuigne Drive, *AMD* at 901 Thompson Place, *Monolithic Memories* at 1165 East Arques Avenue, *TRW Microwave*, Inc. at 825 Stewart Drive, and *National Semiconductor Corporation (NSC)*. Two of these sites, AMD at 915 DeGuigne Drive and TRW Microwave at 825 Stewart Drive are located within the project site. The other sites are industrial uses to the south of the site (see discussion in Section *2.5 Hazards and Hazardous Materials*).

2.3.1.4 Regulatory Overview

The major Federal legislation governing water quality is the Clean Water Act, as amended by the Water Quality Act of 1987. The U.S. Environmental Protection Agency (USEPA) is the Federal agency responsible for water quality management nationwide.

The State of California's Porter-Cologne Water Quality Control Act provides the basis for water quality regulation within California; the Act assigns primary responsibility for the protection and enhancement of water quality to the State Water Resources Control Board (SWRCB), and the nine regional water quality control boards. The SWRCB provides state-level coordination of the water quality control program by establishing state-wide policies and plans for the implementation of State and Federal laws and regulations. Each Regional Water Quality Control Board (RWQCB) adopts and implements a water quality control plan ("Basin Plan") that recognizes the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems (refer to *Section 1.6 Consistency with Relevant Plans and Policies*). The City of Sunnyvale is within the San Francisco Bay Region Water Quality Control Board.

The State Water Resources Control Board has implemented a National Pollution Discharge Elimination System (NPDES) general construction permit for the Santa Clara Valley. For properties of one (1) or more acres, a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) must be prepared prior to commencement of construction. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation. Subsequent to implementation of the general construction permit, the San Francisco Bay RWQCB issued a Municipal Storm Water NPDES Permit to the municipalities in Santa Clara Valley, the County of Santa Clara, and the Santa Clara Valley Water District (SCVWD) as co-permittees. The Santa Clara Valley Urban Runoff Prevention Program (SCVURPPP) assists the co-permittees in implementing the provisions of this permit.

In October 2001, the RWQCB approved an amendment to the NPDES Permit Number CAS 029718, Provision C.3. The amendment to Provision C.3 includes new storm water discharge requirements for new development and redevelopment within the boundaries of the 15 jurisdictions/co-permittees that constitute SCVURPPP, including the City of Sunnyvale, that create, add, or replace one acre or more of impervious surface area on the project site.

The City approved the Hydrograph Modification Management Plan (HMP) Program with the other Santa Clara County co-permittees in July 2005, and this HMP Program is currently being implemented . The purpose of implementing the HMP is to ensure that post project runoff does not exceed estimated pre-project rates, durations, and volumes from the project site (Provision C.3.f.i). The project site is not within the HMP implementation zone identified for Calabazas Creek in Sunnyvale.

2.3.2 Hydrology and Water Quality Impacts

2.3.2.1 Thresholds of Significance

For the purposes of this project, a hydrology and water quality impact is considered significant if the project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially degrade or deplete ground water resources or interfere with ground water recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water table level;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;
- Provide substantial additional sources of polluted runoff or otherwise substantially degrade surface or ground water quality;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Expose people or structures to inundation by seiche, tsunami, or mudflow.

2.3.2.2 General Plan Amendment Impacts

Hydrology and Drainage

The project site currently contains 17 percent pervious surfaces and 83 percent impervious surfaces. The proposed build-out for ITR would include medium and high density residential developments on the existing site. According to the zoning code of the City of Sunnyvale, any residential development must have a minimum of 20 percent of the total area landscaped. In other words, for each residential conversion site within the project area, a minimum of 20 percent of the maximum build out (or maximum density) for the site is required to be landscaped. This is three (3) percent greater than the amount of open land under the existing land uses. Therefore the proposed GPA would reduce the amount of impermeable surface within the project area. For this reason, the project would not impact local ground water recharge. The conversion of industrial and commercial uses to residential may increase potable water consumption, but the impact would not be significant enough to merit new ground water wells or additional water supply delivery. Therefore, the impact would not be significant. (Please refer to Section *2.11 Utilities and Services* for a discussion of water supply and the projected demand from the project.)

The land uses proposed on the site would conform to the existing drainage patterns formed by streets and storm drains. In addition, the proposed land uses would not increase the amount of impervious surfaces, and therefore, would not lead to a higher rate of surface runoff. Potential project impacts are limited to situations where existing open space areas are developed prior to the reduction of impervious areas elsewhere in the GPA area (see discussion below under *Specific Development Project Impacts*).

IMPACT HYDRO-1: Because residential development would include more open space than the existing uses, the proposed project would reduce storm water runoff from the site compared to existing conditions, and would not exceed the City's storm drain system capacity. (Less Than Significant Impact)

Flooding

As mentioned above, the project site is located in Zone AO according to the Flood Insurance Rate Map (FIRM). This means that if a 100-year flood were to occur, the site is expected to be subject to flood depths averaging 1.5 feet. In addition to the FIRM flood plain, a portion of the GPA area falls under the Santa Clara Valley Water District's zero to one foot limit of flooding. The project would be required to construct buildings with the first floors at or above the flood plain elevation to avoid impacts related to flooding. The construction of the proposed project will conform to the FEMA flood zone standards and the City of Sunnyvale Municipal Code related to construction in Zone AO (Municipal Code Chapter 16.62). For these reasons, the project would not result in significant flooding impacts.

IMPACT HYDRO-2: The construction of the proposed project will conform to the FEMA flood zone standards and the City of Sunnyvale Municipal Code related to construction in Zone AO (Municipal Code Chapter 16.62). For these reasons, the project would not result in significant flooding impacts. (Less Than Significant Impact)

Water Quality

Storm water from urban uses contains metals, pesticides, herbicides, and other contaminants such as oil, grease, lead, and animal waste. Runoff from future development on the site may contain oil and grease from parked vehicles, and sediment from the landscaped areas. The conversion of industrial and commercial uses to high density residential uses is not considered to provide additional sources of polluted runoff, since vehicular trip generation should decrease and the amount of open space will actually slightly increase.

However, construction of the proposed development, as well as grading and excavation activities, may result in temporary impacts to surface water quality. Project grading and construction activities would affect the water quality of storm water surface runoff. Construction of residential buildings and paving of streets, pathways, and parking lots would also result in a disturbance to the underlying soils, thereby increasing the potential for sedimentation and erosion. When disturbance to underlying soils occurs, the surface runoff that flows across the site may contain sediments that are ultimately discharged into the storm drainage system and Calabazas Creek.

IMPACT HYDRO-3: Future development under the proposed ITR land use designation could cause a significant temporary increase in the amount of contaminants in storm water runoff during construction. (Significant Impact)

2.3.2.3 Specific Development Project Impacts

AMD Development Project Site

Hydrology and Drainage

A 250-unit townhouse development is proposed at the AMD site, located immediately east of DeGuigne Drive. The land use density for the project would be medium-density residential (R-3, 16 du/ac). Units would be three story and range from 1,230 to 2,050 square feet with a two car garage. The current land use at the site is open space. Although the proposed development would increase the amount of impervious surface at the site, the zoning code of the City of Sunnyvale requires a minimum of 20 percent of the total 14 acre area be maintained as landscaped.

As a result of the increase in impervious surface at the site, storm water runoff to the 54-inch diameter storm drain at Duane Court would increase. The increase in estimated peak runoff would range from one to three percent. This increase translates into approximately 0.01 foot in street flow depth for 10-year and 100-year floods. This projected increase in runoff is considered insignificant and would not create an impact on the storm drain capacities and street flow depths (see Appendix C).

In addition, according to the Interior Drainage Study hydrologic model, this minimal increase in discharge to Calabazas Creek during extreme runoff events would have no impact on downstream flood flows should the AMD site develop prior to other land use ITR conversion.

IMPACT HYDRO-4: The proposed project would not create a significant increase in storm water runoff, and would not impact the City's storm drain system or flooding capacity. (Less Than Significant Impact)

Flooding

The AMD development project site is not located within a regulated 100-year flood zone and the 100-year discharge to Calabazas Creek would remain unchanged. Therefore, the project would not result in significant flooding impacts.

IMPACT HYDRO-5: The project would not result in significant increases in Calabazas Creek flood flows or flooding. (Less Than Significant Impact)

Water Quality

As described above for the overall GPA, construction of the proposed residential development on the AMD property, as well as grading and excavation activities, may result in near-term, temporary impacts to surface water quality. Project grading and construction activities would affect the water quality of stormwater surface runoff. Construction of residential buildings and paving of streets, pathways, and parking lots would also result in a disturbance to the underlying soils, thereby increasing the potential for sedimentation and erosion. When disturbance to underlying soils occurs, the surface runoff that flows across the

site may contain sediments that are ultimately discharged into the storm drainage system and Calabazas Creek.

IMPACT HYDRO-6: Construction of the proposed residential development project on the AMD property could cause a significant temporary increase in the amount of contaminants in stormwater runoff during construction. (Significant Impact)

Taylor-Woodrow Development Project Site

Hydrology and Drainage

The land use density for the Taylor-Woodrow development ITR project would be high-density residential (R-4). The project proposes a total of 304 units ranging from condominium/flats to townhouses approximately five stories in height. The current land use at the site is industrial. The proposed development would decrease the amount of impervious surface at the site, because the zoning code for the ITR designation requires 20 percent of the total area on the 7.3 acre site to be landscaped area.

As a result of the increase in pervious surfaces at the site, storm water runoff to the 54-inch diameter storm drain at Duane Court would decrease. Therefore, development of the Taylor-Woodrow project, irrespective of other redevelopment, would have a less than significant impact on the amount of storm runoff.

IMPACT HYDRO-7: The impact to storm water runoff for the proposed project would be insignificant, and would not impact the City's storm drain system capacity. (Less Than Significant Impact)

Flooding

The Taylor-Woodrow project site is not located within a regulated 100-year flood zone, and with the conversion to residential use on this site, the 100-year discharge to Calabazas Creek would remain unchanged. Therefore, the project would not result in significant flooding impacts.

IMPACT HYDRO-8: The Taylor-Woodrow project site would not result in significant flooding impacts. (Less Than Significant Impact)

Water Quality

Development of the Taylor Woodrow site would not increase the amount of runoff, however, as described above for the overall GPA, construction of the proposed residential development on this property, as well as grading and excavation activities, may result in near-term, temporary impacts to surface water quality. Project grading and construction activities would affect the water quality of stormwater surface runoff. Construction of residential buildings and paving of streets, pathways, and parking lots would also result in a disturbance to the underlying soils, thereby increasing the potential for sedimentation and erosion. When disturbance to underlying soils occurs, the surface runoff that flows across the site may contain sediments that are ultimately discharged into the storm drainage system and Calabazas Creek.

IMPACT HYDRO-9: Construction of the proposed residential development project on the Taylor Woodrow site could cause a significant temporary increase in the amount of contaminants in stormwater runoff during construction. (Significant Impact)

2.3.3 General Plan Policies and Actions

The City of Sunnyvale General Plan *Environmental Management Element* (adopted 1993) contains the following policies and action statements related to hydrology, drainage, flooding, and water quality. Conformance with the following General Plan policies and actions from the *Surface Runoff Sub-Element* of the *General Plan Environmental Management Element* will reduce or avoid hydrology and water quality impacts:

2.3.3.1 Hydrology, Drainage, and Flooding

Surface Runoff Action Statement 3.4C.2d states that the City should continue to maintain the flood plain management practices outlined by the FEMA and the Army Corps of Engineers.

Surface Runoff Policy 3.4D.1 states that the City should consider the impacts on the water quality of surface runoff as part of land use and development decisions and implement BMPs to minimize the total volume and rate of runoff.

Surface Runoff Policy 3.4D.2 states that the City should consider the ability of a land parcel to detain excess storm water runoff in flood prone areas and require incorporation of appropriate controls.

Surface Runoff Action 3.4D.2a states that land use decisions should also consider the ability of a parcel to detain excess storm water in areas prone to flooding through use of oversized collection systems and detention facilities.

2.3.3.2 Water Quality

Surface Runoff Action Statement 3.4A.3i states that the City should modify new development and re-development permitting procedures to require developers and contractors to implement BMPs before, during, and after construction to minimize pollutants discharged in storm water runoff.

Surface Runoff Action Statement 3.4D.1a states that the City should study and determine the appropriateness of a particular parcel of land to support selected BMPs for removing pollutants prior to discharge.

Surface Runoff Action Statement 3.4D.1b states that the City should assure that all applicable development projects obtain coverage under the State Water Board's general construction activity storm water NPDES permit.

2.3.4 Mitigation and Avoidance Measures: General Plan Amendment/AMD and Taylor-Woodrow Projects

Future development under the proposed ITR designation, as well as the two specific near-term projects, would be required to conform to the following measures:

2.3.4.1 Hydrology and Drainage

Development on the project site would be required to utilize structural and non-structural control measures and management practices to minimize the addition of pollution to the storm water system, and comply with a hydromodification management program approved by the RWQCB.

2.3.4.2 Water Quality

MITIGATION MEASURE HYDRO-1: Prior to construction of any phase of any project within the GPA area, the City of Sunnyvale will require that the applicant(s) submit a Storm Water Pollution Prevention Plan (SWPPP) and a Notice of Intent (NOI) to the State of California Water Resource Quality Control Board to control the discharge of storm water pollutants including sediments associated with construction activities. Along with these documents, the applicant may also be required to prepare an Erosion Control Plan. The Erosion Control Plan may include Best Management Practices (BMPs) as specified in the California Storm Water Best Management Practice Handbook for reducing impacts on the City's storm drainage system from construction activities. The SWPPP shall include control measures during the construction period for:

- Soil stabilization practices
- Sediment control practices
- Sediment tracking control practices
- Wind erosion control practices and
- Non-storm water management and waste management and disposal control practices.

MITIGATION MEASURE HYDRO-2: Prior to issuance of a grading permit, the applicant will be required to submit copies of the NOI and Erosion Control Plan (if required) to the City Project Engineer, Department of Public Works. The applicant will also be required to maintain a copy of the most current SWPPP on-site and provide a copy to any City representative or inspector on demand.

MITIGATION MEASURE HYDRO-3: Each phase of development will include provision for post-construction structural controls in the project design where feasible, and would include Best Management Practices (BMP) for reducing contamination in storm water runoff as permanent features of the project. BMPs and design features could include regular sweeping of parking lots and driveways; use of erosion control devices such as silt fences; biofilters; and stenciling on-site catch basins to discourage illegal dumping.

MITIGATION MEASURE HYDRO-4: The project shall comply with Provision C.3 of NPDES Permit Number CAS029718, Order #01-119, which provides enhanced performance standards for the management of storm water for new development.

MITIGATION MEASURE HYDRO-5: Prior to issuance of a Special Development Permit, each phase of development shall include provision for post-construction structural controls in the project design in compliance with the NPDES C.3 permit provisions, and shall include Best Management Practices (BMP) for reducing contamination in stormwater runoff as development will be determined based on design and site-specific considerations and will be determined prior to issuance of Planned Development Permits. Post-construction BMPs and design features could include, but are not limited to, the following:

- Infiltration Basins-shallow impoundments designed to collect and infiltrate storm water into subsurface soils.
- Infiltration Trenches-long, narrow trenches filled with permeable materials designed to collect and infiltrate storm water into subsurface soils.
- Permeable Pavements-permeable hardscape that allows storm water to pass through and infiltrate subsurface soils.
- Vegetated Filter Strips-linear strips of vegetated surface designed to treat surface sheet flow from adjacent surfaces.
- Vegetated Swales-shallow open channels with vegetated sides and bottom designed to collect, slow, and treat storm water as it is conveyed to downstream discharge point.
- Flow-Through Planter Boxes-structures designed to intercept rainfall and slowly drain it through filter media and out of planter.
- Hydrodynamic Separator-flow through structures with a settling or separation unit that removes sediments and other pollutants.
- Media Filtration Devices-two chamber system including a pretreatment settling basin and a filter bed.
- Green Roofs-vegetated roof systems that retain and filter storm water prior to drainage off building rooftops.
- Wet Vaults-subsurface storage system designed to fill with storm water during larger storm events and slowly release it into the conveyance system over a number of hours.

MITIGATION MEASURE HYDRO-6: The applicant, their arborist and landscape architects, shall work with the City to select pest resistant plants to minimize pesticide use, as appropriate using the guidance provided by the SCVURPPP. This may include the use of integrated pest management techniques, site design measures to reduce pest infestations, and the use of pest-resistant plants or landscape management methods to reduce the need for pesticide applications.

MITIGATION MEASURE HYDRO-7: The project shall comply with the City Storm Water Management Ordinance (Municipal Code Chapter 12.60).

2.3.5 Conclusion

HYDRO-1: Because residential development would include more open space than the existing uses, the proposed project would reduce storm water runoff from the site compared to existing conditions, and would not exceed the City's storm drain system capacity. **(Less Than Significant Impact)**

HYDRO-2: The project would not result in significant flooding impacts. **(Less Than Significant Impact)**

HYDRO-3: With the implementation of the above measures, which are included as part of the project, the proposed project would not result in significant hydrology or water quality impacts. **(Less Than Significant Impact with Mitigation Incorporated)**

HYDRO-4: Development of the proposed project on the AMD site would not create a significant increase in storm water runoff, and would not impact the City's storm drain system or flooding capacity. **(Less Than Significant Impact)**

HYDRO-5: Development of the proposed project on the AMD site would not result in significant increases in Calabazas Creek flood flows or flooding. **(Less Than Significant Impact)**

HYDRO-6: With the implementation of the above measures, which are included as part of the project, construction of the proposed residential development project on the AMD property would not cause a significant temporary increase in the amount of contaminants in stormwater runoff during construction. **(Less Than Significant Impact with Mitigation Incorporated)**

HYDRO-7: The impact to storm water runoff from the proposed project on the Taylor Woodrow site would be insignificant, and would not impact the City's storm drain system capacity. **(Less Than Significant Impact)**

HYDRO-8: Development of the Taylor-Woodrow project site would not result in significant flooding impacts. **(Less Than Significant Impact)**

HYDRO-9: With the implementation of the above measures, which are included as part of the project, construction of the proposed residential development project on the Taylor Woodrow site would not cause a significant temporary increase in the amount of contaminants in stormwater runoff during construction. **(Less Than Significant Impact with Mitigation Incorporated)**

2.4 BIOLOGICAL RESOURCES

2.4.1 Setting

The project site is located within a developed area of the City of Sunnyvale. The project site is developed with various industrial and office buildings, surrounding landscaping, and surface parking lots. Habitats in developed areas such as the site are extremely low in species diversity. Species that use this habitat are predominately urban adapted birds, such as rock dove, house sparrow, and starling.

2.4.1.1 Special Status Plants and Animals

Several plant and animal species known to occur in the general vicinity of the project site have been given special status under Federal or State endangered species legislation or otherwise have been designated as sensitive by State resource agencies or professional organizations whose lists are recognized by responding agencies when reviewing environmental documents. Such species are referred to collectively as "species of special-status." Special status plants and animals include species listed under State and Federal Endangered Species Acts (including candidate species), animals designated as Species of Special Concern by the California Department of Fish and Game, and plants listed in the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California.

Special status plants and animals that have been reported in the general project area are primarily associated with freshwater marsh, salt marsh, and aquatic habitats. These habitats are not present on the project site and, therefore, associated species such as the salt harvest mouse and California clapper rail, are not expected to occur on the project site.

Special status animal species that use upland habitats near the bay include burrowing owl, tricolored blackbird, and song sparrow. The project site is mostly occupied by industrial buildings, paving and parking lots. The lack of natural plant communities, relatively small size of areas with plant cover, limited food sources, and extensive human disturbance reduce the habitat quality of the site. The burrowing owl is the only special-status species with the potential to occur on the site.

Burrowing Owl

The burrowing owl is a small, ground-dwelling owl and is a California species of special concern. Burrowing owls favor flat, open grassland, or gentle slopes and sparse shrubland ecosystems. These owls prefer annual and perennial grasslands, typically with few trees or shrubs. In California, burrowing owls are found in close association with California ground squirrels. Owls use ground squirrel burrows for shelter and nesting. Currently, habitat loss and fragmentation are the largest threats to burrowing owls and have caused populations to decline dramatically in recent decades. Burrowing owls are now often encountered as single pairs rather than small colonies, and in increasingly marginal habitats, such as levee banks, landfill sideslopes, dedicated open spaces, and even landscaped medians associated with parking lots.

Most of the overall ITR site is occupied by industrial buildings, paving and parking lots. The AMD Riding Group specific development project site, however, consists of an open grass field, with mature landscaping trees along the perimeter. While the AMD Riding Group project site does not provide high quality burrowing owl habitat, California ground squirrels do inhabit this site. In addition, a nesting pair and three young burrowing owls were observed on this portion of the site in 2000. In 2001, a female burrowing owl and four young were observed on this portion of the site. Therefore, burrowing owls have been present, and have reproduced and nested on the site in the past. No owls were observed on this site, however, during several site visits conducted in 2006.

Based on the above discussion, because of the recent records of owls on the AMD Riding Group site, there is a potential for burrowing owls to be present on this portion of the project site. No other special-status plant or animal species are expected to occur on the project site.

2.4.1.2 City of Sunnyvale Tree Preservation Ordinance

The City of Sunnyvale Tree Preservation Ordinance defines a tree of significant size as any woody plant which has a trunk of 38 inches or greater in circumference, measured at four feet above the ground. A multi-trunk tree is considered a single tree and measurement of that tree includes the sum of the circumferences of tree trunks of that tree. A multi-trunk tree is considered to be of significant size if at least one trunk has a circumference of 38 inches or larger or if the sum of the circumference of all the trunks is 113 inches or greater.

A tree removal permit is required from the City for the removal of any significant size trees. A program-level tree census of the overall ITR site was completed and two tree surveys of the specific development project sites were completed by *HortScience* in April 2006. The complete tree survey reports, identifying the species, size, health, and monetary evaluation of each tree, are included in Appendix D of this EIR.

The overall ITR site has a total of 2,265 trees, 905 of which are of significant size. Fifty-seven different species were represented on the site. A summary of the size and species distribution of trees on the site is provided in Table 5, below.

TABLE 5: SPECIES AND SIZE DISTRIBUTION OF CENSUS TREES					
Common Name	**Scientific Name Size Class**				**No. of Trees**
		Small (4"-11")	**Medium (12"-23")**	**Large (> 24")**	
Blackwood acacia	*Acacia melanoxylon*	13	5	0	18
Japanese maple	*Acer palmatum*	8	0	0	8
Red maple	*Acer rubrum*	3	0	0	3
Silk tree	*Albizia julibrissin*	11	5	0	16
White alder	*Alnus rhombifolia*	3	0	0	3
Strawberry tree	*Arbutus unedo*	17	5	0	22
European birch	*Betula pendula*	73	2	0	75
Deodar cedar	*Cedrus deodara*	3	4	1	8
Chinese hackberry	*Celtis sinensis*	4	0	0	4
Red bud	*Cercis sp.*	23	0	0	23
Red gum	*Eucalyptus camaldulensis*	1	6	4	11
Flowering gum	*Eucalyptus ficifolia*	0	1	0	1
Nichol's willow leaf peppermint	*Eucalyptus nicolai*	7	0	0	7
Silver dollar gum	*Eucalyptus polyanthemos*	1	2	5	8
Red ironbark	*Eucalyptus sideroxylon*	0	4	1	5
Raywood ash	*Fraxinus oxycarpa*	31	0	0	31
Evergreen ash	*Fraxinus uhdei*	53	205	56	314
Australian willow	*Geijera parvifolia*	1	5	0	6
Ginkgo	*Ginkgo biloba*	2	0	0	2
Kentucky coffee tree	*Gymnocladus dioica*	0	8	0	8
English walnut	*Juglans regia*	1	0	0	1
Hollywood juniper	*Juniperus chinensis*	2	2	0	4
Crepe myrtle	*Lagerstromia indica*	40	62	0	102
Grecian laurel	*Laurus nobilis*	6	0	0	6
Glossy privet	*Ligustrum lucidum*	7	13	2	22
Sweetgum	*Liquidambar styraciflua*	40	0	0	40
Tulip tree	*Liriodendron tulipfera*	23	7	1	31
Brisbane box	*Lophostemon confertus*	66	0	0	66
Southern magnolia	*Magnolia grandiflora*	23	5	0	28
Crab apple	*Malus floribunda*	1	0	0	1
European olive	*Olea europaea*	12	1	4	17
Photinia	*Photinia fraseri*	6	0	0	6
Colorado grn spruce	*Picea pungens*	11	0	0	11
Canary Island pine	*Pinus canariensis*	34	137	8	179
Aleppo pine	*Pinus halepensis*	0	39	0	39
Italian stone pine	*Pinus pinea*	0	6	4	10
Monterey pine	*Pinus radiata*	6	14	2	22
Japanese black pine	*Pinus thunbergiana*	1	0	0	1
Chinese pistache	*Pistachia chinensis*	54	5	0	59
London plane	*Platanus x acerifolia*	195	1	2	198
Fern pine	*Polocarpus gracilior*	9	0	0	9
Flowering plum	*Prunus cerasifera*	32	0	0	32
Flowering cherry	*Prunus serrulata*	34	0	0	34

TABLE 5 (CONTINUED): SPECIES AND SIZE DISTRIBUTION OF CENSUS TREES					
Common Name	**Scientific Name Size Class**				**No. of Trees**
		Small (4"-11")	**Medium (12"-23")**	**Large (> 24")**	
Bradford pear	*Pyrus calleryana*	258	14	0	272
Evergreen pear	*Pyrus kawakamii*	20	1	0	21
Coast live oak	*Quercus agrifolia*	19	4	0	23
Holly oak	*Quercus ilex*	27	24	5	56
Red oak	*Quercus rubra*	4	0	0	4
Cork oak	*Quercus suber*	1	0	0	1
Southern live oak	*Quercus virginiana*	14	4	0	18
Italian buckthorn	*Rhamnus alaternus*	2	0	0	2
Black locust	*Robinia pseudoacacia*	12	0	0	12
Brazilian pepper	*Schinus terebinthifolius*	16	4	0	20
Coast redwood	*Sequoia sempervirens*	121	166	10	297
Carob	*Seratonia siliqua*	0	7	0	7
Chinese elm	*Ulmus parvifolia*	9	25	0	34
Mexican fan palm	Washingtonia robusta	0	4	3	7
Total (Percent of Total)		**1360** (60%)	**797** (35%)	**108** (5%)	**2,265** (100%)

Of the 57 species present, three species dominated the population: raywood ash (314 trees), coast redwood (297 trees) and Bradford pear (272 trees). Together, these species account for approximately 39 percent of the trees on the site.

Tree size was dominated by trees in the small size category (4-11" in diameter), with 1,360 trees (60 percent of the population) in this category. This reflects the age of the tree population on the site, as the trees were planted during the development of these industrial and commercial properties. Another factor contributing to the dominance of smaller trees on the site is that numerous species used on the site are small in stature, even when mature. Examples include Japanese maple, strawberry tree, red bud, Hollywood juniper, crepe myrtle, and crab apple.

The 797 medium size trees (12-23" in diameter) made up approximately 35 percent of the population. The 108 large size trees (24" and greater in diameter) made up only five percent of the population. More than one-half of these (56 trees) were evergreen ash.

Coast live oak was the only one of the 57 species that is native to the site. Nineteen of the 23 trees present were in the small size category. The remaining four were in the medium size category. The coast live oaks were generally in poor health, with poor color foliage.

Trees on the overall ITR site were generally in good condition, however, a few species had uniformly poor condition. These included blackwood acacia, coast live oak (as just mentioned), flowering gum, Nichol's willow-leaf peppermint, and red gum.

AMD Riding Group Development Site

One hundred twenty-six (126) trees, including 122 trees of significant size, were identified on the AMD Riding Group development site. Nine different species were represented on this site. A summary of the condition and number of trees on the AMD Riding Group site is provided in Table 6, below. The specific size, condition and location of each of these trees is provided in Appendix D.

TABLE 6:
TREES ON AMD RIDING GROUP SITE

Common Name	Scientific Name	Condition				
		Poor	Fair	Good	Excell.	No. of Trees
Evergreen ash	*Fraxinus uhdei*	--	8	62	6	**76**
Australian willow	*Geijera parviflora*	3	1	--	--	**4**
Japanese privet	*Ligustrum japonicum*	2	3	--	--	**5**
Olive	*Olea europaea*	--	--	1	--	**1**
Monterey pine	*Pinus radiata*	--	--	1	--	**1**
Holly oak	*Quercus ilex*	1	2	3	--	**6**
Southern live oak	*Quercus virginiana*	--	1	--	--	**1**
African sumac	*Rhus lancea*	--	1	1	--	**2**
Coast redwood	*Sequoia sempervirens*	--	1	2	27	**30**
Total		**6**	**17**	**70**	**33**	**126**

All of the trees on the AMD Riding Group site were planted as part of landscape development for the current uses. Trees were not evenly distributed across the site, but were concentrated on the periphery. None of the surveyed trees was indigenous to the site.

Two species dominated the trees on the site: evergreen ash (76 trees, 60% of the total population) and coast redwood (30 trees, 24 % of the population). No other species was represented by more than six trees.

The evergreen ash trees were located in two areas of the site: as a double-row along the Duane Avenue frontage and as street trees adjacent to a service road and parking area. Trees were mature in development with trunk diameters from 16-40 inches. All of the ash trees met the City's criteria for protected status. The overall condition of the ash trees was good; none were in poor condition.

The coast redwoods were a mix of semi-mature and mature trees. All but one were greater than 12 inches in diameter. Most of the redwoods were in excellent condition with well-developed crowns.

Taylor Woodrow Development Site

One hundred fourteen (114) trees were identified on the Taylor Woodrow development site. Fourteen (14) different species were represented on this site. A summary of the condition and number of trees on the Taylor Woodrow site is provided in Table 7, below. The specific size, condition and location of each of tree on this site is provided in Appendix D.

TABLE 7:
TREE CONDITION AND NUMBER OF TREES ON TAYLOR WOODROW SITE

		Condition Rating			
Common Name	**Scientific Name**	**Poor (1-2)**	**Fair (3)**	**Good (4-5)**	**No. of Trees**
European birch	*Betula pendula*	3	6	3	12
Lemon bottlebrush	*Calistemon citrinus*	--	11	--	11
Blue atlas cedar	*Cedrus atlantica 'Glauca'*	--	1	1	2
Australian willow	*Giejera parviflora*	2	7	--	9
Crepe myrtle	*Lagerstroemia indica*	--	--	12	12
Sweetgum	*Liquidambar styraciflua*	--	6	5	11
Southern magnolia	*Magnolia grandiflora*	--	6	3	9
Monterey pine	*Pinus radiata*	8	1	--	9
Fern pine	*Podocarpus gracilior*	8	4	2	14
Flowering plum	*Prunus cerasifera*	--	16	--	16
Bradford pear	*Pyrus calleryana*	2	--	4	6
Coast redwood	*Sequoia sempervirens*	--	1	2	3
Total (Percent of Total)		**23** (20%)	**59** (52%)	**32** (28%)	**114** (100%)

The most frequently occurring species was flowering plum (16 trees, or 14% of the population) There were 14 fern pines, 12 crepe myrtle, and 12 European birch trees on this site. Of the larger growing species, there were 11 sweetgum, nine (9) Monterey pines, and nine (9) southern magnolias. The trees were generally growing in planting beds near the buildings and in parking lot islands. None of the trees on the site were native to the area; all were planted exotic species.

Overall, the tree condition on this site was generally fair (59% of the trees) to good (28% of the trees). Twenty-three trees were in poor condition. Trees in poor condition included fern pines that had been topped and sheared, and therefore had poor structure. The Monterey pines were in declining health, being adapted to the cool, moist climate of the coast rather than the warmer inland climate present on this site. Alternatively, all 12 crepe myrtles were in good condition.

2.4.2 Biological Resources Impacts

2.4.2.1 Thresholds of Significance

For the purposes of this project, a biological resources impact is considered significant if the project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations;
- Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or
- Conflict with any local ordinances protecting biological resources, such as a tree preservation ordinance.

2.4.2.2 General Plan Amendment and Project Specific Development Impacts

Special-Status Plants and Animals

The site would continue to provide urban habitat for urban-adapted species with redevelopment of the project site. The entire project site has been previously disturbed by human use. There are no wetlands or other sensitive habitat on the project site. With the exception of burrowing owls and nesting raptors, the presence of any special status plants or animals on site is unlikely; therefore, the project will not impact most special status plants or animals.

Burrowing Owls

While no burrowing owls were seen on the site, owls occur in the area and suitable habitat exists on the site. If burrowing owls are present on-site at the time of construction, construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered a "taking" by the CDFG. Furthermore, the destruction of occupied burrowing owl burrows is also considered a taking. Any loss of burrowing owls or fertile eggs, any activities resulting in nest abandonment, or the destruction of occupied burrowing owl burrows would constitute a significant impact. Construction activities such as tree removal, site grading, etc., which disturb a nesting burrowing owl on-site or immediately adjacent to the site (to the construction buffer zone only) or destroy occupied burrows would constitute a significant impact.

The loss of occupied habitat would also constitute a significant impact. Because the areas of the ITR site not occupied by industrial buildings, paving and parking lots, (i.e., the AMD Riding Group project site) consist of grass field areas and areas with large trees, the suitability of these areas for burrowing owls is marginal. For this reason, the project would not result in a significant loss of burrowing owl habitat.

IMPACT BIO-1: Construction related to the proposed AMD Riding Group specific development project could result in impacts to Burrowing Owls, which could occupy suitable habitat on this portion of the project site. (Significant Impact)

Nesting Raptors

There are no known raptor nests on the site. There is the potential for nesting raptors (e.g., barn owls, red shouldered hawks, and Cooper's hawks) to be present, however, within the trees on and adjacent to the site at the time of redevelopment. Construction during the nesting season could disturb or destroy occupied nests, which would result in the loss of eggs or young birds. The value of the breeding habitat is not high due to the urban development on and adjacent to the site. The loss of trees, therefore, would not constitute a significant loss of breeding habitat for raptor species in the area. The loss of reproductive effort for individual birds would, however, be a significant impact.

IMPACT BIO-2: Construction activities during the nesting season may result in the disturbance or destruction of breeding raptors or their nests. (Significant Impact)

Significant-Size Trees

General Plan Amendment

As described above, 905 (or approximately 40%) of the 2,265 trees on the overall site, are of significant size. Trees on the overall ITR site were generally in good condition, however, a few species had uniformly poor condition. Many of the trees on the site would be suitable for preservation.

At the subsequent specific development project stage, each project proponent/applicant may propose to preserve some of the existing trees in place on each site, or relocate, and therefore retain them on-site, as part of the new landscaping plans. However, no detailed site development plans currently exist that specify the exact locations of the new buildings, streets and other changes that would take place on the subareas of the ITR site. The grading required and the nature of the future residential and/or new industrial development, which could include increased site coverage, would limit preservation of trees in place. Relocation may, therefore, be the only viable method for retaining most of the existing trees. For these reasons, this analysis assumes that, with conversion of the entire site to residential uses, all 2,265 trees, including all 905 significant sized trees, could be removed as part of the project. Therefore, the loss of these trees would be a significant impact. The project and any proposed tree removal would be required to conform to the City's Tree Preservation Ordinance (Municipal Code Chapter 19.94).

IMPACT BIO-3: The proposed conversion of the site to residential uses could result in the removal of up to 2,265 trees, 905 of which are of significant size. (Significant Impact)

AMD Riding Group Specific Development Project

The development of the AMD Riding Group specific project could result in the removal of up to 126 trees, including 122 trees of significant size, which are present on this site (refer to discussion above under Existing Setting). The most significant impacts to existing trees would result from excavation and grading for building pads and parking areas, and from trenching for underground utilities.

IMPACT BIO-4: The development of the AMD Riding Group specific development project could result in the removal of up to 126 trees, including 122 trees of significant size, on the site. (Significant Impact)

Taylor Woodrow Specific Development Project

The development of the Taylor Woodrow specific project could result in the removal of up to 114 trees which are present on this site (refer to discussion above under Existing Setting). The most significant impacts to existing trees would result from excavation and grading for building pads and parking areas, and from trenching for underground utilities.

The 48 trees located on the periphery of the site have the potential to be preserved in-place. Of these 48 trees, 11 have poor suitability for preservation. The remaining 37 trees have good or moderate suitability for preservation.

IMPACT BIO-5: The development of the Taylor Woodrow specific development project could result in the removal of up to 114 trees, including 30 trees of significant size, on the site. (Significant Impact)

2.4.3 General Plan Policies and Actions

The City of Sunnyvale General Plan *Land Use and Transportation Element* (adopted 1997) contains the following policies and action statements related to biological resources. Conformance with the following General Plan policies and actions from the *General Plan Land Use and Transportation Element* will reduce or avoid biological resources impacts:

Land Use Policy R1.11 states that the City should protect regional environmental resources through local land use practices.

Land Use Action Statement R1.11.1 states that the City should participate in State and regional activities to protect the natural environment.

2.4.4 Mitigation and Avoidance Measures

The project proposes the following measures:

2.4.4.1 Burrowing Owl

Implementation of the following mitigation measures would reduce impacts on burrowing owls to a less than significant level.

MITIGATION MEASURE BIO-1: In conformance with Federal and State regulations protecting raptors against direct "take," pre-construction surveys for burrowing owls shall be conducted by a qualified ornithologist prior to any soil-altering activity or development occurring within the project area. The preconstruction surveys shall be conducted per CDFG guidelines (currently no more than 30 days prior to the start of site grading), regardless of the time of year in which grading occurs. If no burrowing owls are found, then no further mitigation would be warranted. If breeding owls are located on or immediately adjacent to the site, a construction-free buffer zone around the active burrow must be established as determined by the ornithologist in consultation with CDFG. No activities that may disturb breeding owls, including grading or other construction work or evictions of owls, shall proceed.

MITIGATION MEASURE BIO-2: If preconstruction surveys determine that burrowing owls occupy the site, and avoiding development of occupied areas is not feasible, then the owls may be evicted outside of the breeding season, with the authorization of the California Department of Fish and Game (CDFG). The CDFG typically only allows eviction of owls outside of the breeding season (only during the non-breeding season [September1-January 31]) by a qualified ornithologist, and generally requires habitat compensation on off-site mitigation lands.

MITIGATION MEASURE BIO-3: A final report of burrowing owls, including any protection measures, shall be submitted to the Director of Community Development prior to start of grading.

2.4.4.2 Nesting Raptors

Raptors (e.g., eagles, hawks, and owls) and their nests are protected under both Federal and State laws and regulations. The Federal Migratory Bird Treaty Act (16 U.S.C. 703, Suppl. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Birds of prey are protected in California under Fish and Game Code section 3503.5. Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

MITIGATION MEASURE BIO-4: In conformance with Federal and State regulations regarding protection of raptors, the following California Department of Fish and Game protocols shall be completed prior to any development on the site to ensure that development does not result in the disturbance of nesting raptors:

Avoidance. Construction should be scheduled to avoid the nesting season to the extent feasible. The nesting season for most birds, including raptors and shrikes, in the project site area extends from January through August.

Preconstruction/Pre-disturbance Surveys. If demolition and/or construction are to occur between January and August, then pre-construction surveys for nesting birds shall be conducted by a qualified ornithologist to ensure that no nests will be disturbed during project implementation. This survey shall be conducted no more than 14 days prior to the initiation of demolition/construction activities during the early part of the breeding season (January through April), and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August).

During this survey, the ornithologist shall inspect all trees and other potential habitats (e.g., grasslands, buildings) within and immediately adjacent to the impact areas for nests. If an active nest is found sufficiently close to work areas to be disturbed by these activities, the ornithologist, in consultation with CDFG, shall determine the extent of a construction-free buffer zone to be established around the nest, typically 250 feet, to ensure that no nests of species protected by the MBTA or State Code will be disturbed during project implementation.

Inhibit Nesting. If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., bushes, trees, grass, burrows) that will be removed by the project shall be removed before the start of the nesting season (February), if feasible, to help preclude nesting. Removal of vegetation or structures to be removed by the project shall be completed outside of the nesting season, which extends from January through August.

A final report of nesting birds, including any protection measures, shall be submitted to the Director of Planning, Building and Code Enforcement prior to start of grading.

2.4.4.3 Trees

As described above in the *Impacts* section, detailed development plans have not yet been developed for most of the ITR site that would identify the exact locations of new buildings, streets and other site changes that would take place as part of the proposed ITR conversion project. Therefore, all of the 2,265 trees on the site, including 905 significant size trees, could be removed as part of the project. Tree replacement will be necessary for the removal of an existing tree. Development on the project site will be subject to mitigation measures and existing General Plan policies and project-specific mitigation measures, including the following:

MITIGATION MEASURE BIO-5: The Prior to approval of a Site Development Permits for any subarea of the project site, a comprehensive tree survey for the parcel(s) being developed shall be required. The site design and permit approval shall incorporate preservation of existing trees to the maximum extent practicable, to the satisfaction of the Director of Community Development. In locations where preservation of existing trees is not feasible due to site constraints, relocation and replanting of significant existing trees (especially native species) shall be incorporated into the project, where feasible and appropriate, to the satisfaction of the Director of Community Development.

MITIGATION MEASURE BIO-6: The specific development projects shall each conform to the City's Tree Preservation Ordinance (Municipal Code, Chapter 19.94). At the discretion of the Director of Community Development, significant trees that are to be removed shall be replaced, replanted, or relocated (Municipal Code, Sections 19.94.080, 19.94.090, and 19.94.100).

MITIGATION MEASURE BIO-7: A tree protection plan shall be completed. The plan shall demonstrate how tree protection shall be provided during and after construction and shall include any of the protective measures set forth in Section 19.94.120 of the Municipal Code.

2.4.5 Conclusion

BIO-1: With the implementation of the above mitigation measures, the proposed project would not result in significant impacts to burrowing owls, which could occupy suitable habitat on the AMD Riding Group portion of the project site. **(Less Than Significant Impact with Mitigation Incorporated)**

BIO-2: With the implementation of the above mitigation measures, the proposed project would not result in significant impacts to breeding raptors or their nests. **(Less Than Significant Impact with Mitigation Incorporated)**

BIO-3: With the implementation of the above mitigation measures, the overall ITR project would not result in significant impacts to trees. **(Less Than Significant Impact with Mitigation Incorporated)**

BIO-4: With the implementation of the above mitigation measures, the development of the AMD Riding Group specific development project would not result in significant impacts to trees. **(Less Than Significant Impact with Mitigation Incorporated)**

BIO-5: With the implementation of the above mitigation measures, the development of the Taylor Woodrow specific development project would not result in significant impacts to trees. **(Less Than Significant Impact with Mitigation Incorporated)**

2.5 HAZARDS AND HAZARDOUS MATERIALS

The following discussion is based on a Hazardous Materials Evaluation prepared for the overall ITR project site by *TRC Lowney* in April 2006. A complete copy of this report is provided in Appendix E of this EIR. This evaluation included the review of several previous reports prepared for the two development sites, including two Phase I Environmental Site Assessments and Soil and Ground Water Quality Evaluations prepared for the AMD Duane Avenue development site by *TRC Lowney* in October and November 2004, as well as a Phase I Environmental Site Assessment and an Additional Limited Phase II Investigation prepared by *Shaw Environmental* for the Taylor Woodrow Duane Court site in February and March 2005. A peer review of these reports by *ENVIRON International Corporation* was also completed in February 2006. Complete copies of these previous reports are on-file with the City of Sunnyvale, Community Development Department.

In addition, a Screening Level Chemical Risk Appraisal was completed by *TRC Lowney* in September 2006 to evaluate the likely off-site consequences of a release of hazardous substances currently used at the site. This report is also provided in Appendix E of this EIR.

2.5.1 Setting

Hazardous materials are commonly used by large institutions, commercial, and industrial businesses. Hazardous materials include a broad range of common substances such as motor oil and fuel, pesticides, detergents, paint, and solvents. A substance may be considered hazardous if, due to its chemical and/or physical properties, it poses a substantial hazard when it is improperly treated, stored, transported, disposed of, or released into the atmosphere in the event of an accident.

2.5.1.1 Existing and Prior Operations and Uses

Overall Project Site

The site is currently developed with a variety of industrial uses, landscaping, and surface parking lots. The approximately 130-acre project site is currently designated *Industrial* in the City of Sunnyvale's General Plan and is zoned *M-S (Industrial and Service)*. This designation typically includes "light industrial" uses such as office support areas, research and development, product assembly, and warehousing. The project site area was primarily agricultural land from as early as the late 1930s until the 1950s and 1960s. At that time, the site was developed with a mix of commercial and industrial development. The site has been occupied by a variety of electronics manufacturing, research and development uses, including *Philips Semiconductor* (formerly *Signetics*), *Advanced Micro Devices* (a manufacturer of microprocessors and flash memory devices), and *TRW*. The site is currently occupied by AMD, the Sunnyvale Technology Park offices, *CarrAmerica*, *Spansion*, *Metelics*, and several other industrial and office users.

AMD, Spansion, Metelics, and the other industrial users on the site use and store hazardous materials at several locations as part of their operations. The use and storage of these materials is currently governed by various local, state, and Federal requirements, including the City of Sunnyvale Fire Code, the California Code of Regulations, and the National Fire Protection Association's Flammable and Combustible Liquids Code.

AMD Duane Avenue Development Site

This property includes 920/948 East Duane Avenue and 1090 East Duane Avenue. Most of this property (1090 East Duane Avenue) is owned by AMD and consists of an open grass field, with mature landscaping trees along the perimeter. Pathways connecting the industrial offices to the west, south and east cross the southern portion of this site. A former gasoline service station (Jim's Exxon) occupies the northwestern corner (920/948East Duane Avenue) of this site.

Based on aerial photographs from 1939 to 1956, this site was previously cultivated with crops. In a 1965 aerial photograph, the site was undeveloped. Aerial photographs from 1982 through the present show the site developed with the current grass field and landscaping. The gasoline station on the northwest portion of this site was present since the early 1960s.

Taylor Woodrow Duane Court Development Site

The Taylor Woodrow Duane Court development site consists of 1030, 1031, 1050, 1080, and 1095 East Duane Avenue and includes five multi-tenant industrial park buildings, which are identified as "Commerce Park." Four of the buildings consist of combination office and warehouse space, and one building is exclusively office space. Landscape trees are present along the perimeter, adjacent to the buildings, and within the parking lot areas on this site.

Based on aerial photographs, this site was historically used for agricultural purposes. In 1982, the current buildings were present on the site.

2.5.1.2 Prior Sources of Contamination Within and Near the Site

Overview

The project site has been occupied with industrial office/R&D buildings since the 1960s. Prior to that time, the site was undeveloped or used for agricultural purposes. Historical applications of pesticides and herbicides may have occurred on-site. The project site is also located at the northern end of an area where chemical impacts to ground water have occurred, primarily as a result of chemical releases from five National Priority List (NPL/Superfund) sites within or near the project site, including: *AMD/Spansion* at 915 DeGuigne Drive, *AMD* at 901 Thompson Place, *Monolithic Memories* at 1165 East Arques Avenue, *TRW Microwave*, Inc. at 825 Stewart Drive, and *National Semiconductor Corporation (NSC)*. Two of these sites, AMD/Spansion at 915 DeGuigne Drive and TRW Microwave at 825 Stewart Drive are located within the project site. The other sites are industrial uses to the south of the site (see discussion below).

Regulatory Database Search

A database search was undertaken for the project site for the purpose of identifying the sites within the project area reported as known sources of contamination, as well as sites that handle or store hazardous materials. Federal, state, local, historical, and brownfield databases were searched. The databases searched and the specific results are provided in Appendix E of this EIR.

On-Site Reported Hazardous Material Releases

The ITR project site was listed on several databases reviewed. Sixteen facilities within the site itself were listed as hazardous material users on the site (refer to Table 1 in Appendix E). Six of those reported hazardous material users were also listed as having a release of hazardous materials, including two National Priority List (NPL/Superfund) facilities. These reported releases are summarized below:

1. *TRW Microwave*, Inc. at 825 Stewart Drive, located on the southwestern portion of the ITR project site, was listed on the following databases: CERCLIS, RCRA-SQG, Finds, NPL, and ROD. This facility was previously operated by a semiconductor/microprocessor manufacturer. In 1983 trichloroethylene (TCE), dichlorobenzene, tetrachloroethylene (PCE), acetone, n-butyl acetate and xylenes were detected in ground water monitoring wells at this facility. In 1983 an underground storage solvent tank was removed and impacted soils were transported off-site for disposal. The RWQCB issued Cleanup and Abatement Orders to this facility to clean up impacted ground water. Beginning in 1985, under RWQCB supervision, TRW began operating a ground water pump and treat system and installed a ground water monitoring well network. In addition, the RWQCB required that TRW and two other facilities jointly develop a plan to remediate ground water affected by hazardous materials releases from these three facilities. (The other two facilities are *Phillips Semiconductors/Signetics* at 440 N. Wolfe Road, which is located on the southwest portion of the project site, and the nearby and off-site *Advanced Micro Devices* facility at 901 Thompson Place. These three companies formed a group known as "The Companies" to clean up the commingled ground water contamination.)

2. *Phillips Semiconductors* (also referred to as *Signetics*) at 440 N. Wolfe Road, located on the southwest portion of the site, was listed on the following databases: FINDS, HAZNET, (Leaking Underground Storage Tank (LUST), RCRA-LQG, CA FID UST, HIST LUST, CLEANERS, EMI, and SWEEPS. This facility is currently occupied by an office building. The Signetics facility was listed as having four underground tanks, three listed as containing diesel fuel, and the contents of the fourth UST was not listed. The LUST database reports that soil was impacted by diesel and that the case was closed in 1995. The California Cleaners database lists dry cleaning related facilities based on SIC code and lists Philips Semiconductors with four records created in 1982, with SIC codes for dry cleaning plants, laundry and garment services, power laundries, and garment pressing and agents for laundries and drycleaners. This facility was listed as a large quantity generator of hazardous waste and had 68 records of disposal for hazardous waste.

3. *Advanced Micro Devices Inc. (AMD)/Spansion* at 915 DeGuigne Drive, located at the northwestern portion of the site, was listed on the following databases: Cal-Sites, CERCLIS, FINDS, HAZNET, NPL, RCRA-LQG, TRIS, ROD, HIST UST, and EMI. This company reportedly manufactures semiconductor/microprocessor devices. This facility covers approximately 5.5 acres, and the building was constructed in 1973. Reportedly, twelve USTs at this facility were used to store "waste", and one was used to store "product". Underground waste solvent storage tanks were reported. In 1981 trichlorobenzene was detected in ground water monitoring wells installed near the building. Other solvents, including trichloroethylene, were detected in on-site soils. According to the RWQCB, soil was impacted from leaking tanks and spills during the

handling of solvents. In 1982 three USTs were removed and impacted soil was excavated and transported off-site for disposal. Impacted ground water from this property has reportedly commingled with impacted ground water from two other nearby release facilities (known as "The Companies" – as described above). Since late 1982, AMD/Spansion and Signetics have operated a pump and treat system located at the 915 DeGuigne Drive property to remediate ground water. In 1984, the RWQCB issued a Cleanup and Abatement Order that required AMD, Signetics and TRW to develop a joint plan to attempt to prevent further migration of impacted ground water.

4. *943 DeGuigne Drive*, located midway along the northern portion of the site, was listed on the HMIRS and CHMIRS databases due to a reported release of 26 to 75 gallons of hydrochloric acid in 1999. One database reported a release of 75 gallons of hydrochloric acid solution and the other database reported a release of 26 gallons of hydrochloric acid. The release reportedly occurred due to a leaking drum on a flatbed truck, and AMD's emergency response team responded. The substance was reportedly confined to the truck and area underneath the truck. The building at this address is currently occupied by AMD.

5. *Jim's Exxon* at 920 E. Duane Avenue, located on the AMD Development Project Site, midway along the northern boundary of the site, was listed on the following databases: HIST UST, LUST, CA FID UST, HIST LUST, SWEEPS UST, CORTESE, HAZNET and HIST LUST. The former service station building at this location was vacant at the time of the site visit and reportedly had two fuel USTs and one waste oil UST. This facility is listed as having a release of gasoline and MTBE that impacted ground water. MTBE was detected in ground water at concentrations up to five (5) parts per billion (ppb). This facility received case closure status in 1998.

6. *1050 East Duane Avenue*, located on the Taylor Woodrow Development Project Site, at the northeast corner of the project site, was listed on the RCRA-SQG and FINDS databases as *Technical Finishing Inc.*, at 1050 E. Duane Avenue, Suite A; on the ERNS database as 1050 E. Duane (Old Plating Company); and on the HAZNET database as *Alcatel Vacuum Products Inc.*, 1050 E. Duane Avenue, Suite E. Technical Finishing Inc. was listed as a small quantity generator of hazardous waste with no violations found and Alcatel Vacuum Products was listed as having four records of waste disposal. Based on this information, neither of these facilities was listed as releasing hazardous materials. 1050 East Duane (Old Plating Company) was listed on the ERNS database due to a release of 10 gallons of waste nitric acid and 10 gallons of waste sulfuric acid on May 16, 1992.

The following facilities were listed with addresses that are within the project site boundaries, however, no structures with these addresses were observed during a field visit.

- *913 DeGuigne Drive*, which would be located adjacent to the AMD/Spansion building at 915 DeGuigne Drive at the northwest portion of the project site. This address was listed on the CHMIRS and ERNS databases due to a release of an unknown quantity of "hydrochloric acid" when the gas scrubbers backed-up due to a power failure. No action was taken, and the gas reportedly dissipated.

- *Signetics Corporation* at 897 Stewart Drive, which would be located at the northeast corner of DeGuigne Drive and Stewart Drive near the center of the site along the southern boundary. Two buildings, which were arranged in different configurations than the current buildings, were observed at this location in aerial photographs dated 1965 through 1991, and it is possible that this address was associated with a former building at that location. This facility was listed as a hazardous waste generator and as a CERCLIS facility with no further remedial action planned after a preliminary assessment was completed in 1987.

Vicinity NPL Facilities

Two NPL facilities were identified up-gradient (in terms of ground water flow) and within 1/4-mile of the site, and a third NPL facility was identified up-gradient and approximately 1/2-mile from the site. The NPL facilities were reported to be *AMD* at 901 Thompson Place, located approximately 1/8-mile south of the western end of the site, *Monolithic Memories* (also referred to as AMD at Subunit 2 of OUl) at 1165 East Arques Avenue, located about 1/8-mile south of the eastern end of the ITR Site, and *National Semiconductor* at 2900 Semiconductor Drive in Santa Clara, located about 1/2-mile south of the eastern portion of the ITR Site. The locations of these facilities are shown on Figure 3 in Appendix E.

The AMD facility at 901 Thompson Place occupies approximately six acres. This electronic equipment manufacturing facility has reported releases of solvents to ground water (UST releases). Compounds including 1,1,2-trichloroethylene (TCE), dichloroethylene (DCE), and Freon-113 have been detected on this property. Impacted ground water from the 901 Thompson Place facility has commingled with releases from three other facilities; AMD at 915 DeGuigne Drive (on the ITR Site), TRW at 825 Stewart Drive (on the ITR Site), and the former Signetics facilities at 440 Wolfe Road (on the ITR Site) and at 811 E. Arques (adjoining the ITR Site). Chlorodifluoromethane, acetone, TCE, ethylbenzene, 1,1,1-trichloroethane (TCA), xylenes, dichlorobenzene, DCE, PCE, and trichlorobenzene have been detected in ground water on these properties and in a down-gradient direction (north-northeast). Ground water remediation, including extraction and treatment of ground water and anaerobic bioremediation, is currently on-going in this vicinity.

Ground water down-gradient from the Monolithic Memories facility (also referred to as AMD at Subunit 2 of OU1) reportedly has been impacted by solvents from leaking USTS. Ethylbenzene, xylenes, acetone, chlorobenzene, chloroform, dichlorobenzene, PCE and TCE have been detected. Ground water extraction and treatment is currently on-going.

The National Semiconductor (NSC) facility is an electronic equipment manufacturer that occupies approximately 50 acres. Similar to the other NPL facilities, ground water reportedly has been impacted with solvents from leaking tanks at this facility and has impacted ground water downgradient of this facility to the north-northeast. Vinyl chloride, TCE, and DCE reportedly have been detected, and ground water extraction and treatment is currently on-going in this vicinity.

Other Vicinity Reported Hazardous Materials Releases

Other nearby reported hazardous materials spills and releases considered to have a moderate or high potential to impact the ITR Site are presented in Table 3 of Appendix E. The potential for ITR Site impact was evaluated based on information in the database records regarding the type of release, current case status, and distance and direction (up- or cross-gradient) from the ITR Site (refer to Appendix E for additional detail regarding these facilities and releases).

2.5.1.3 RWQCB Oversight

The project site is within an area designated by the Regional Water Quality Control Board (RWQCB) as the Stewart Drive Operable Unit (SDOU). In 1996, the RWQCB defined the SDOU and five subunits to allow individual dischargers to proceed with investigation and cleanup independently, given evidence of commingling of ground water contamination. These subunits are summarized below:

Subunit 1: 999 East Arques Avenue (999 Arques Corporation) and the southwest portion of the 1077 East Arques Avenue property (CAE Electronics). Subunit 1 is located south and up-gradient of the project site.

Subunit 2: 968 through 970 Stewart Drive (Sobrato Development Company) on the southern portion of the site. Subunit 2 is located south and up-gradient of the project site.

Subunit 3: The northern portion of the 1077 East Arques Avenue property. Subunit 3 is located south and up-gradient of the project site.

Subunit 4: Properties located down-gradient of Subunit 3 which includes the eastern portions of the project site.

Subunit 5: Properties located north of 968 through 970 Stewart Drive, which includes the east-central portion of the project site.

The adopted RWQCB cleanup and abatement order designated the 999 Arques Corporate responsible for investigation, remediation, and monitoring activities in subunits 1, 2, and 5. CAE Electronics was designated as responsible for subunits 3 and 4.

Based on the ground water elevation measurements recorded during the October 2004 monitoring event, the unconfined A-aquifer zone was generally present between depths of approximately five (5) to 25 feet below ground surface (bgs). The confined B1 and B2 aquifers are generally encountered at approximate depths of between 20 to 45 feet and 40 to 60 feet, respectively.

There are 14 wells in subunit 5 on the site that are monitored. The ground water flow direction was generally toward the north-northeast in the A-zone aquifer across subunit 5; toward the north-northeast in the B1-zone across subunit 2 and the southern portion of subunit 5, and north to northwest in the B2-zone across the northern portion of subunit 5. TCE was the predominant VOC reported in ground water samples collected from the A-zone

at concentrations up to 123 ppb. Other VOCs detected were cis-1,2-DCE (up to 63.3 ppb) and PCE (up to 29.8 ppb).

Concentrations of these compounds have generally remained stable or declined, except for cis-1,2-DCE detected from ground water sampled from monitoring well AW-2A on the ITR Site (see Figure 4 of Appendix E), which has gradually increased from 0.86 ppb in October 2000 to 63.3 ppb in October 2004. Migration of cis-1,2-DCE from the Commercial Street Operable Unit (CSOU), also known as the Mohawk Site, into the western boundary of subunits 2 and 5 was reportedly increasing.

Ground water extraction began in 1990 in subunits 1 and 2 from the reported source/hot spot areas and ground water monitoring has been on-going to monitor VOC concentrations within subunits 1, 2 and 5 to evaluate remedial action effectiveness. The ground water extraction system reportedly consists of four extraction wells located in subunit 1 and 2. The remedial objective for ground water is to reduce VOC concentrations to below drinking water maximum contaminant levels (MCLs).

At the request of the RWQCB, a review of existing data and conditions was performed to further assess the potential for vapor intrusion into indoor air using as a standard the RWQCB Environmental Screening Levels (ESLS) for vapor intrusion in a commercial setting. The VOC concentrations beneath commercial buildings and beneath the residential area at the north end of SDOU subunit 5 were below the RWQCB ESLs for vapor intrusion (refer to Appendix E).

The report provided recommendations for continued operation of the ground water extraction and treatment system, continued ground water monitoring, with a few modifications, and evaluation of the data in the next five-year review report. In areas at the ITR site that are beyond the hydraulic capture of ground water extraction wells, natural attenuation of detected compounds in ground water is monitored. A summary of the review of these follow up monitoring reports is provided in Appendix E.

2.5.1.4 Evaluation of Specific Development Sites

As described above, two 10,000-gallon gasoline USTs and one 280-gallon waste oil UST historically were located at the service station (Jim's Exxon) on the northwest portion (920/948 East Duane Avenue) of the AMD Development Project Site. The service station reportedly operated in this location from 1958/1959 until closure of the USTs in November 1997. Verification soil samples collected from the fuel UST excavations and from beneath the fuel islands or product lines reportedly did not contain total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, or xylenes (BTEX), or methyl tertiary butyl ether (MTBE) above laboratory reporting limits. Verification soil samples collected from the waste oil excavation reportedly did not contain MTBE, BTEX, oil and grease, or halogenated volatile organic compounds (VOCs) above laboratory reporting limits. Analysis of ground water samples from the vicinity of the former USTs reportedly detected up to 3,400 parts per billion (ppb) TPHg, 2,800 ppb MTBE, 54 ppb benzene, 76 ppb toluene, and 390 ppb xylenes. Following removal of approximately 875 gallons of ground water from the tank pits, hydrocarbon concentrations reportedly dropped to 520 ppb TPHg and 21 ppb xylenes. No other compounds were detected. As a result of the analytical data summarized

above, the SCVWD issued a case closure for the facility on February 10, 1998. The case closure summary stated that the corrective action did not need to be reviewed if the land use changed.

Soil Quality Evaluation

AMD Property/Duane Avenue Development Site

Soil sampling conducted at the property revealed concentrations of the pesticide dieldrin ranging from less than 0.02 to 0.085 parts per million (ppm). Other pesticides detected in the soils on this property included endrin and total DDT; however, dieldrin was the only pesticide detected above its respective residential preliminary remediation goal (PRG) and direct exposure Environmental Screening Level (ESL). The highest reported dieldrin concentrations were limited to the southern property boundary, where elevated levels above the residential regulatory thresholds were present in the upper two to three (2-3) feet of soil.

Taylor Woodrow/Duane Court Development Site

Soil samples were analyzed on this property for the presence of TPHg, TPHd, BTEX compounds, MTBE, and other VOCs, as well as California Administrative Manual (CAM 17) metals. The soil sample results were compared to the residential PRGs.

Soil samples collected from borings B-10, B-11, and B-12 were analyzed for the presence of TPHg, BTEX, and MTBE (refer to Appendix E). A maximum concentration of 0.043 milligrams per kilogram (mg/kg) of ethylbenzene was detected in soil sample B-12, well below the residential PRG for ethylbenzene. None of the other materials tested for in these samples were reported above laboratory detection limits.

Soil samples collected from borings B-10, B-11, B-12, B-15, and B-17 were analyzed for the presence of VOCs. PCE, TCE, and xylenes were detected in one or more of these samples. A maximum concentration of 0.059 mg/kg PCE, 0.042 mg/kg TCE, and 0.025 xylenes was detected in the soil sample collected from boring B-12 (refer to Appendix E). These concentrations were below the respective PRGs for PCE, TCE, and xylenes. None of the other materials were reported above laboratory detection limits.

Soil samples collected from borings B-6, B-7, B-8, B-10, B-11, B-12, B-15, and B-17 were analyzed for the presence of CAM 17 metals. The analytical results show the presence of arsenic in every soil sample above the California modified PRG or 0.062 mg/kg. A maximum concentration of 12 mg/kg arsenic was detected in the soil sample collected from boring B-7 (refer to Appendix E). Concentrations of 80 mg/kg and 79 mg/kg vanadium were detected in the soil samples from borings B-17 and B-8 respectively, and exceed the PRG established for vanadium. It should be noted that both arsenic and vanadium concentrations at the site were consistent with background soil levels for the region.

CAM 17 metal and VOC results were also compared to regulatory limits calculated as a total threshold limit concentration (TTLC) as outlined by California Code of Regulations (CCR) Title 22, in order to determine whether any soil sample could be classified as a California defined hazardous waste. None of the CAM 17 metal or VOC sample results exceeded the Title 22 TTLCs, and therefore, would not be considered hazardous waste.

Ground Water Quality Evaluation

Ground water sampling results were evaluated using the Tier 1 environmental screening levels (ESLs) published by the California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB, SF Bay) in *Screening for Environmental Concerns at Sites with Contaminated Soil and Ground water.* Under "Tier 1," ESLs are not regulatory cleanup standards; the intention of the ESLs is to be a conservative guide for the evaluation of risk to human health. ESLs were developed to be used at a wide variety of impacted sites in developed areas and are not necessarily used by any local regulatory agency as site-specific clean-up goals. The ground water analytical data was compared to the ESLs for ground water that is not a current or potential source of drinking water.

AMD Property/Duane Avenue Development Site

During the subsurface investigation, grab ground water samples were collected from three exploratory borings to assist in evaluating the extent of impacted ground water beneath the site. Laboratory analyses of the ground water samples detected various halogenated volatile organic compounds (HVOCs) including TCE up to 150 ppb and cis-1,2 DCE up to 100 ppb. The California Primary Maximum Contaminant Levels (MCL) for TCE and cis-1,2 DCE are 5.0 ppb and 6 ppb, respectively. The off-site source for the HVOCs in the ground water at this site appears to be associated with the releases described above.

Taylor Woodrow/Duane Court Development Site

Ground water samples collected from borings B-6 through B-20 on February 24 and 25, 2005, were analyzed for the presence of one or more of the following parameters: TPH-G TPH-D, BTEX compounds, MTBE, other VOCS, and CAM 17 metals.

Ground water samples W-B6 through W-Bl3 were collected from borings B-6 through B-13, respectively, and analyzed for TPH-G, BTEX compounds, and MTBE. Ground water samples W-B6, W-B7, and W-B8 were additionally analyzed for TPH-D. A maximum concentration of 6,900 micrograms per liter (mg/l) TPH-G and 17,000 mg/l TPH-D was detected in ground water sample W-B6. These concentrations exceed the 500 mg/l and 640 mg/l ESLs set for TPH-G and TPH-D, respectively, in water which is not a drinking water source. Concentrations of 670 mg/l TPH-D from ground water sample W-B7 also exceeded the ESL-set TPH-D. All detectable concentrations of BTEX compounds and MTBE were well below the ESLS. A maximum concentration of 10 mg/l MTBE was observed in the ground water sample W-B8 and maximum concentrations of 37 mg/l toluene and 9.6 mg/l xylenes were observed in the ground water sample W-B6. These MTBE, toluene, and xylene concentrations do not exceed their respective ESLs of 1,800 mg/l, 37 mg/l, and 9.6 mg/l. None of the other materials were reported as above laboratory detection limits.

Ground water samples W-B9 through W-B20 were collected from borings B-9 through B-20, respectively, and analyzed for VOCs. Above detection limit concentrations of chloroform, cis1,2-dichloroethene, ethylbenzene, tetrachloroethene (PCE), trichloroethene (TCE), and xylenes have been reported in one or more of the ground water samples. A maximum concentration of 1.7 mg/l chloroform from ground water sample W-B10 is below the ESL of 340 mg/l. Maximum concentrations of 49 mg/l cis-1,2-dichloroethene, 6.4 mg/l PCE, and 100 mg/l TCE were reported from ground water sample W-Bl2. These concentrations all fall below the ESLs of 590 mg/l for cis-1,2-dichloroethene, 120 mg/l for PCE, and 360 mg/l for

TCE. A maximum concentration of 69 mg/l xylenes reported from ground water sample W-B20 is above the ESL of 13 mg/l. None of the other VOCs were reported above the laboratory detection limits.

Ground water samples W-B9 through W-Bl7 were further analyzed for the presence of CAM 17 metals. Concentrations of cobalt, nickel, and selenium have been reported in several of the ground water samples above detection limit and above ESL. Concentrations of 3.3 mg/l, 3.2 mg/l, 4.0 mg/l, and 3.2 mg/l cobalt were reported for ground water samples W-B9, W-B10, W-Bl2, and W-Bl7, respectively. These concentrations are above the 3.0 mg/l ESL for cobalt in ground water which is not a drinking water source. Concentrations of 17 mg/l, 8.2 mg/l, 9.0 mg/l, and 13 mg/l nickel were reported for ground water samples W-Bl0, W-Bl1, W-Bl2, and W-Bl7, respectively. These concentrations are equal to or above the 8.2 mg/l ESL for nickel. Concentrations of 7.2 mg/l, 30 mg/l, and 15 mg/l selenium were reported for ground water samples W-Bl3, W-Bl4, and W-Bl6, respectively. These concentrations are above the 5.0 mg/l ESL for selenium.

Soil Vapor Evaluation

Soil vapor samples were collected from the two specific development sites, following the California Department of Toxic Substances Control's (DTSC) recommended sampling methods.

AMD Property/Duane Avenue Development Site

In order to evaluate the potential for off-gassing of chlorinated solvents from the impacted ground water beneath this property, eight soil vapor/gas samples were collected at random locations across the property and were analyzed for volatile organic compounds (VOCs). Laboratory analysis of the samples detected several VOCs in soil vapor; however, only TCE in the sample collected from sample SV-1 (refer to Appendix E) exceeded regulatory thresholds. Sample SV-1 is located in the northeastern corner of the site, where elevated concentrations of chlorinated solvents have previously been detected in shallow and deep ground water immediately up gradient of this property. Based on this data, soil gas in the area of SV-1 exceeds regulatory thresholds for residential development.

Taylor Woodrow/Duane Court Development Site

Seven soil vapor samples, designated SVB14 through SVB20, were collected at the locations of borings B-14 through B-20, respectively. All samples were analyzed for the presence of VOCs. A maximum concentration of 85 micrograms per cubic meter (mg/m^3) benzene from the soil vapor sample SVBL 9 exceeds the benzene ESL of 84 mg/m^3. A maximum concentration of 1,200 mg/m^3 TCE from soil vapor sample SVB17 is slightly below the TCE ESL of 1,217 mg/m^3. All other detections of VOCs in soil vapor samples SV-Bl4 through SV-B20 were below their respective ESL values.

2.5.1.5 Asbestos-Containing Building Materials (ACBMs) Lead-Based Paint, and Fluorescent Lighting

Based on the age of the existing buildings on the two development sites, it is possible that asbestos-containing building materials (ACBMs) were utilized in construction. Asbestos containing materials are of concern because exposure to them has been linked to cancer.

Lead-based paint is of concern, both as a source of direct exposure through ingestion of paint chips, and as a contributor to lead interior dust and exterior soil. Lead was widely used as a major ingredient in most interior and exterior oil-based paints prior to 1950. Lead compounds continued to be used as corrosion inhibitors, pigments and drying agents from the early 1950's. In 1972, the Consumer Products Safety Commission limited lead content in new paint to 0.5 percent (5000 ppm) and in 1978, to 0.06 percent (600 ppm).

Fluorescent lights are likely also present in the buildings on the site. Fluorescent light ballasts manufactured before 1978 may contain PCBs, and the fluorescent light tubes may contain mercury.

2.5.2 Hazards and Hazardous Materials Impacts

2.5.2.1 Thresholds of Significance

For the purposes of this project, a hazardous materials impact is considered significant if the project will:

- Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

2.5.2.2 General Plan Amendment and Specific Development Project Impacts

Hazard Impacts from Use, Storage, and Delivery of Hazardous Materials on the Site

As described above, the existing industrial operations on the site involve the use, handling, and storage of hazardous materials. Fuels, paints, flammable liquids, toxic gases, semiconductor gases, cleaning solutions, and other potentially hazardous materials would continue to be delivered to and stored on-site and used as part of on-going operations. Fertilizers, pesticides, and herbicides used for landscaping in the future will also be used and stored on the site.

The development of portions of the site with residential and commercial uses would introduce an additional population of sensitive receptors in close proximity to the hazardous materials used on the industrial campuses. The proposed ITR combining district zoning would allow the site to be redeveloped with more intensive development. No limitation is proposed on the type, quantities, location, storage, or use of hazardous materials on the remaining industrial areas of the site. Future development and/or future uses on the site could include the storage and use of large quantities of acutely hazardous materials, whose accidental release into the environment could cause off-site impacts. The development allowed by the proposed ITR combining district zoning would permit residences and private open spaces (patios, balconies, and yards) within 100 feet of industrial areas. Under the proposed ITR designation, family daycare homes would also be allowed on the site, and commercial daycare facilities could be considered on the site with a Use Permit.

If hazardous materials are released from an industrial use or storage area near sensitive receptors, the health effects of the release could be significant. Children represent a sensitive population with regard to the risk for adverse health effects from exposure to chemicals. This is due to a number of factors, including their higher respiratory rate and lower body weight. In addition to being at greater risk from lesser quantities of chemicals, young children are also more vulnerable because of their lack of independent mobility and inability to respond to emergencies. As a result, children are more susceptible to significant health impacts from releases of chemicals, and require more assistance in getting out of the path of such releases.

Of particular concern are hazardous materials such as gases that can move offsite more quickly and therefore, could have greater potential for significant consequences. Chemicals that may be accidentally released to the air and have the greatest potential to cause health impacts in the event of an accidental release are frequently referred to as "acutely hazardous materials."[4]

The City of Sunnyvale regulates toxic gases and other hazardous materials including the use and storage of toxic gases. Nevertheless, accidental releases of toxic gases can and do occasionally occur in Sunnyvale, particularly in the event of fires or other upset conditions.

[4] Although current law does not refer to "acutely hazardous materials", the term is still widely used because it defines a set of substances that can have adverse impacts over distance when accidentally released.

Even if a hazardous material is accidentally released, it does not necessarily have the potential for causing off-site consequences. Many such substances are only kept in small quantities that make an accidental release unlikely to result in a substantial concentration that would release very far from the source. In the case of certain acutely hazardous materials, however, which are used in Silicon Valley manufacturing processes and are stored in substantial quantities, there is a possibility that an accidental release could result in significant risk to off-site receptors. These substances include arsine, phosphine, ammonia, chlorine, and others.[5]

The risk from hazardous materials depends on the amount of substance released, the type of chemical, the wind and temperature conditions, the terrain, and a number of other factors. Without limiting the locations of these hazardous materials and wastes within the site area, sensitive receptors could be built immediately adjacent to industrial businesses which may use hazardous materials, and the possibility exists that a user of significant quantities or acutely hazardous materials could locate immediately adjacent to a substantial residential population in the future.

There does not appear under current regulations, to be any way that governmental agencies could limit or preclude such a situation from occurring unless the City chooses to restrict the use of acutely hazardous materials under the proposed *ITR* combining district zoning. Therefore, the project could result in the exposure of sensitive receptors to hazardous materials impacts in the event of an accidental release or upset.

Screening Level Chemical Risk Appraisal and Modeling Analysis

In order to evaluate the risk of exposure to hazardous materials used at the site, a screening level chemical risk appraisal and modeling analysis was completed to estimate the off-site consequence of a release of substances currently used on the ITR site (see Appendix E). This analysis evaluated the impacts likely to result from a release of semiconductor gases used at the Spansion plant (915 DeGuigne Drive) and the Metelics plant (975 Stewart Drive), both on the ITR site. The main chemicals of potential concern (COPC or COC) used at these facilities include chlorine, chlorine trifluoride, silicon tetrafluoride, and dichlorosilane.

The Santa Clara County Toxic Gas Ordinance (TGO) regulates semiconductor facilities and other toxic gas users. For semiconductor facilities, acutely hazardous process materials are housed in secondary containment facilities, which typically include ventilated gas cabinet storage of gases, leak detection, and treatment capability for discharged gases. In addition, other standard industry controls include valves equipped with restrictive flow orifices (RFO) for the primary gas containment (cylinder). The gas cylinders are equipped with RFO's to limit the release of toxic gases in the rare event of an equipment and/or valve failure during processing.

[5] Ammonia is also a common household chemical and is not typically considered hazardous. However, in large quantities which may be utilized in industrial processes, it can have a significant potential for off-site consequences.

Methodology

The hypothetical external release scenario consists of damage to the valve cover and valve during cylinder delivery. This scenario assumes that all engineering controls required by law are in-place and that a leak occurs through a limiting RFO. In this type of release event, the rate of chemical gas release would be restricted by the RFO, and the rate of release can be approximated. Due to the RFO, this scenario results in a steady release of gas from the cylinder. [Please note that this scenario is not the "worst-case" release, but a plausible accidental release scenario, given the facilities present on the site and standard industry controls. For the worst-case event (as defined by the U.S. Environmental Protection Agency), the contents of the cylinder would be emptied into the atmosphere in ten (10) minutes. This faster release scenario could result in greater or lesser effects than those described below, depending on the actual materials released and the atmospheric conditions at the time.] Refer to Appendix E for additional detail regarding the methodology of this analysis.

Releases were modeled using worst-case meteorology (stable atmospheric conditions) to estimate worst-case concentrations downwind. In general, stable atmospheric conditions represent calm dark days or calm night-time conditions. During stable atmospheric conditions and low wind speed, the vertical and horizontal dispersal of a chemical release is minimized, resulting in higher predicted downwind concentrations. In addition, normal atmospheric and wind conditions were also evaluated to provide a comparison to the worst-case scenario.

Three of the compounds analyzed (chlorine trifluoride, silicon tetrafluoride, and dichlorosilane) may react with moisture in air to produce heat and hydrogen chloride or hydrogen fluoride. These reactions would essentially reduce the concentration of chemical gases downwind of a release. However, to be conservative, this analysis did not account for any such reactions or reduction in concentrations.

Thresholds and Exposure Criteria

Releases were evaluated for the ability to produce a level of concern (LOC) at the exterior of the selected facility. The criteria to establish an LOC to human health are drawn from the American Industrial Hygiene Association's (AIHA) Emergency Response Guidelines (ERPGs), and the National Institute of Occupational Safety and Health (NIOSH) Immediately Dangerous to Life and Health Concentrations (IDLHs). These levels are defined below:

> ERPG-1: The ERPG exposure level 1 is defined as the maximum airborne concentration that nearly all individuals could be exposed to for up to one (1) hour without experiencing more than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor.
>
> ERPG-2: The ERPG exposure level 2 is defined as the maximum airborne concentration that nearly all individuals could be exposed to for up to one (1) hour without experiencing or developing irreversible or other serious side effects or symptoms that could impair an individual's ability to take protective action.

ERPG-3: The ERPG exposure level 3 is defined as the maximum airborne concentration that nearly all individuals could be exposed to for up to one (1) hour without experiencing or developing life-threatening health effects.

IDLH: Immediately Dangerous to Life and Health (IDLH) concentrations represent maximum concentrations from which one could escape within 30 minutes without a respirator and without experiencing escape-impairing or irreversible health effects. IDLHs are assumed to be applicable to healthy adult workers in the workplace, and do not account for exposure to more sensitive individuals.

The Bay Area Air Quality Management District generally recommends the use of ERPG-2 as the threshold for evaluating significant exposure impacts. In addition, the U.S. Environmental Protection Agency (EPA) generally defines the "distance to toxic endpoint" in the *Risk Management Program (RMP)* for off-site consequent analysis as the ERPG-2 concentration. Refer to Appendix E for additional detail regarding the assumptions and methodology used in this release analysis.

Modeling Analysis Results

The results of the dispersal modeling are summarized in Table 8, below.

TABLE 8:
DISPERSAL MODELING RESULTS

Chemical Release (atmospheric conditions)	LOC* (Criteria)	Approximate Distance to LOC
Chlorine (worst-case)	3 ppm** (ERPG-2)	141 feet
Chlorine (normal)	3 ppm (ERPG-2)	42 feet
Chlorine Trifluoride (worst-case)	1 ppm (ERPG-2)	81 feet
Silicon Tetrafluoride (worst-case)	2 ppm (1/10th IDLH)	681 feet
Silicon Tetrafluoride (normal)	2 ppm (1/10th IDLH)	162 feet
Dichlorosilane (worst-case)	10 ppm (1/10th IDLH)	39 feet

*LOC = Level of Concern
**ppm = parts per million

The results of this screening level release analysis indicate that silicon tetrafluoride could have significant off-site consequences (at a distance of up to 681 feet) in the event this chemical compound is released under the worst-case, stable atmospheric conditions assumed. The primary determinant of the downwind distance is the release rate estimate. Since silicon tetrafluoride is stored at elevated pressures, the release rate is far greater than the other gases, and the distance to the LOC concentration is much greater. It should be noted that if there was a significant reaction with water vapor in the air (which would be expected under normal atmospheric conditions), downwind concentrations of this compound following a release would likely be much lower (the distance to the LOC would be approximately 162 feet instead of 681 feet), as shown in Table 8 above. Under normal atmospheric conditions, the LOC would not extend to uses off the ITR site.

The proposed ITR designation would not change the existing industrial operations that remain on the site or the logistics of hazardous materials deliveries to these industrial operations. The use, delivery, storage, and disposal of hazardous materials on the site would continue to be governed by existing local, State and Federal requirements (refer to discussion above under *Existing Setting*). Various local, state, and Federal laws, regulations, and ordinances require sufficient engineering controls to help prevent chemical releases, and in the event of a release, to help protect human health and the environment. A number of local, state, and Federal regulations address the prevention of accidental releases of chemicals that can affect human health. The implementation and enforcement of these regulations regarding the use, storage, transport, and disposal of hazardous materials will reduce the potential for impacts to existing and future residents and school children. Therefore, while the proposed project would introduce an additional population onto the site, based on the above discussion and the information provided in the Screening Level Release Modeling Analysis, development of residential uses on the site would not result in the significant exposure of an additional population of sensitive receptors to hazardous materials impacts .

IMPACT HAZ-1: The construction of residential uses on the site could result in the exposure of an additional population of sensitive receptors to hazardous materials impacts in the event of an accidental release or upset. However, various local, State, and Federal laws, regulations, and ordinances require sufficient engineering controls to help prevent chemical releases, and in the event of a release, to help protect human health and the environment. The implementation and enforcement of these regulations regarding the use, storage, transport, and disposal of hazardous materials will reduce the potential for impacts to existing and future residents and school children. (Less Than Significant Impact)

Residual Soil and Ground Water Contamination

Soils throughout the project area will be disturbed during future development. As described in the *Setting* section above, the soils throughout the site may contain a variety of chemical compounds associated with fuels, oils, flammable liquids, metals, pesticides, or other hazardous substances originating from historical and/or current land uses. Contaminated soils encountered during site-specific development, especially excavating and grading, could result in health risks to construction workers, future residents, and/or the general public.

Contaminated ground water may be also encountered during site redevelopment activities, and could also result in health risks to constructions workers, future residents, and/or the general public. As described above, the project site is within an area designated by the RWQCB as the Stewart Drive Operable Unit (SDOU), and investigation and cleanup of commingled ground water contamination is ongoing.

AMD Development Site

As described in the *Setting* section above, soil sampling conducted at the property revealed concentrations of the pesticide dieldrin above its respective residential preliminary remediation goal (PRG) and direct exposure Environmental Screening Level (ESL). The highest reported dieldrin concentrations were limited to the southern property boundary, where elevated levels above the residential regulatory thresholds were present in the upper two to three (2-3) feet of soil.

Various halogenated volatile organic compounds (HVOCs) including TCE and cis-1,2 DCE were detected at up to 150 ppb and 100 ppb, respectively. These levels exceed the California Primary Maximum Contaminant Levels (MCL) for TCE and cis-1,2 DCE, which are 5.0 ppb and 6 ppb, respectively. The off-site source for the HVOCs in the ground water at this site appears to be associated with the releases described above.

TCE in the sample collected from sample SV-1 (refer to Appendix E), which is located in the northeastern corner of the site, where elevated concentrations of chlorinated solvents have previously been detected in shallow and deep ground water immediately upgradient of this property, exceeded regulatory thresholds for residential development.

Taylor Woodrow Development Site

As described in the *Setting* section above, concentrations of arsenic and vanadium in the soils on this property were above their respective PRGs. It should be noted however, that the levels of arsenic and vanadium found on this site are consistent with background soil levels for the region.

Concentrations of TPH-G and TPH-D were detected in ground water samples on this property above their respective ESLs. The presence of these materials in the ground water beneath the site could impact future residents.

Benzene was also detected on this site above the ESL of 84 mg/m^3. All other detections of TCE and VOCs in soil vapor samples were below their respective ESL values.

IMPACT HAZ-2: Based on the above discussion, residual concentrations of chemicals of particular concern present in soils and ground water on the specific development sites could expose future sensitive receptors or construction workers to significant hazard impacts. (Significant Impact)

Asbestos-Containing Building Materials (ACBMs) and Lead-Based Paint

Due to the age of the existing buildings on the site, ACBMs may be present. Since demolition of the existing buildings would be part of the project, National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines require that all potentially friable ACBMs be removed prior to building demolition or renovation that may disturb the ACBM.

Demolition of buildings which contain lead-based paint could create lead-based dust at concentrations which would expose workers and nearby receptors to potential health risks. State regulations require that air monitoring be performed during and following renovation or demolition activities at sites containing lead-based paint. If the lead-based paint is peeling, flaking, or blistered, it would need to be removed prior to demolition. It is assumed that such paint would become separated from the building components during demolition activities; and must be managed and disposed of as a separate waste stream. If the lead based paint is still bonded to the building materials, its removal is not required prior to demolition.

Demolition of the existing buildings may expose construction workers, residents, or school children in the vicinity to harmful levels of lead or ACBMs. The project proposes to conform to the following regulatory programs and to implement the following measures to reduce potential impacts due to the presence of ACBMs and/or lead-based paint to a less than significant level:

- As appropriate, a lead survey of painted surfaces and soil around the buildings shall be performed prior to demolition. Requirements outlined by Cal/OSHA Lead in Construction Standard, Title 8, CCR 1532.1 would be followed during demolition activities, including employee training, employee air monitoring and dust control. Any debris or soil containing lead-based paint or coatings would be disposed of at landfills that meet acceptance criteria for the waste being disposed.

- All potentially friable ACBMs shall be removed in accordance with the NESHAP guidelines prior to building demolition or renovation that may disturb the materials. All demolition activities shall be undertaken in accordance with OSHA standards contained in Title 8 of the CCR, Section 1529, to protect workers from exposure to asbestos. Specific measures could include air monitoring during demolition and the use of vacuum extraction for asbestos-containing materials.

- A registered asbestos abatement contractor shall be retained to remove and dispose of ACBMs identified in the asbestos survey performed for the site in accordance with the standards stated above.

- Materials containing more than one (1) percent asbestos are also subject to Bay Area Air Quality Management District (BAAQMD) regulations. Removal of materials containing more than one (1) percent asbestos shall be completed in accordance with BAAQMD requirements.

IMPACT HAZ-3: The proposed project, with the implementation of the above standard measures, would not result in significant impacts related to the presence of ACBMs or lead-based paint. (Less Than Significant Impact)

Disturbance of Other Materials During Demolition and Construction

As described in the Setting section above, the project site has been occupied with industrial office/R&D buildings since the 1960s. These buildings have been occupied by a variety of electronics manufacturing, research and development uses, which use and store hazardous materials at several locations as part of their operations. While, the use and storage of these materials is currently governed by various local, state, and Federal requirements, demolition of the existing structures and facilities on the site could result in the upset or accidental release of hazardous materials.

Fluorescent lights are likely also present in the buildings on the site. Fluorescent light ballasts manufactured before 1978 may contain PCBs, and the fluorescent light tubes may contain mercury. In addition, other mercury-containing products, such as heating-ventilation and air conditioning (HVAC) system thermostats, pilot light sensors, and other mercury-containing electrical components and switches, are likely present in the existing buildings on the site.

IMPACT HAZ-4: Demolition of the existing structures and facilities on the site could result in the upset or accidental release of hazardous materials which may be present. (Significant Impact)

Other Hazards

The project site is not located within the Santa Clara County Airport Land Use Commission (ALUC) jurisdiction, nor is it on one of the City's designated evacuation routes. The site is not located within an area subject to wildfires. The project does not propose any substantial increase in the use of hazardous materials on-site.

IMPACT HAZ-5: The proposed project would not result in safety hazards or impacts related to wildfires or from an increase in the on-site use and/or storage of hazardous materials. (Less Than Significant Impact)

2.5.3 General Plan Policies and Actions

The City of Sunnyvale General Plan *Community Development Element* (adopted 1993) contains the following policies and action statements related to hazards and hazardous materials. Conformance with the following General Plan policies and actions from the *Safety and Seismic Safety Sub-Element* of the *General Plan Community Development Element* will reduce or avoid hazardous materials impacts:

Hazardous Materials Policy 2.4A.3 calls for the City to promote a living and working environment safe from exposure to hazardous materials.

Hazardous Materials Action Statement 2.4A.3a calls for the City to maintain current information on the hazardous materials used in Sunnyvale businesses and their potential hazards to the community.

Hazardous Materials Action Statement 2.4A.3b calls for the City to participate in future development of proposed State and local code changes in storage and handling methods for hazardous materials.

Hazardous Materials Action Statement 2.4A.3d calls for the City to use the Santa Clara County Hazardous Waste Management Plan (CHWMP) as Sunnyvale's policy document and planning guide for planning off-site hazardous waste management facilities and all hazardous waste management programs within the City.

2.5.4 Mitigation and Avoidance Measures

2.5.4.1 Programmed Measures

Based on existing laws and regulations, the following measures would be incorporated during future development on the site to further minimize hazardous materials impacts:

- A number of local, State, and Federal regulations address the prevention of accidental releases of chemicals that can affect human health. Future development on the project site shall comply with all local, State and Federal regulations governing the use, storage, transportation, and disposal of hazardous materials, including, but not limited to, the following:

    - *AB 2185* and *AB 3777* contain requirements for emergency response plans. The purpose of these plans is to assist local agencies in preparing for a hazardous materials spill. Emergency plans identify the potential for accidents in a community, define a chain of command in the event of an emergency, outline escape routes if necessary, and provide other emergency procedures. Each responsible agency maintain detailed operation procedures for responses to hazardous materials problems.

    - The *California Accidental Release Prevention (CalARP) Program*, aims to prevent accidental releases of regulated hazardous materials that represent a potential hazard beyond the boundaries of the property. Facilities that are required to participate in the CalARP program use or store specified quantities of toxic and flammable substances (hazardous materials) that can have off-site consequences if accidentally released. The City of Sunnyvale reviews CalARP risk management plans as the Certified Unified Program Agency (CUPA) for Sunnyvale.

- Within the City of Sunnyvale, a number of local regulations govern the use and storage of hazardous materials. Toxic gas storage on industrial and commercial sites must comply with Sunnyvale Municipal Code and the California Fire Code. Engineering controls, such as secondary containment, automatic shut-off, seismic shutoff, emergency alarms, gas detection and signage may be required depending on the class and quantity of gas stored. The implementation and enforcement of these local, state, and Federal regulations regarding the use, storage, and transport of hazardous materials (including setbacks for flammable storage from property lines) reduce the potential for impacts to off-site land uses, in the event of an accidental release.

- In addition to regulations regarding accidental releases, the routine emission of hazardous materials is locally regulated by the Bay Area Air Quality Management District (BAAQMD). BAAQMD's Air Toxics Program integrates Federal and State air toxics mandates with local goals that have been established by the BAAQMD's Board of Directors. The Program consists of several elements that are designed to identify and reduce public exposure to toxic air contaminants. BAAQMD programs include preconstruction review with the requirement that new of modified sources of toxic air contaminants use Best Available Control Technology to minimize emissions.

2.5.4.2 Specific Development Project Mitigation Measures

The two specific development projects, as well as any future redevelopment under the proposed ITR designation, would include the following mitigation measures:

Residual Soil and Ground Water Contamination

The presence of contaminants in the ground water, soil, and soil vapor beneath the site could impact future residents of the project. Conformance with the following mitigation measures would reduce health risks to future residents, construction workers and/or visitors associated with the residual presence of these materials at the site:

MITIGATION MEASURE HAZ-1: Prior to the issuance of demolition and site development permits, each project applicant shall prepare an application for oversight agency selection as described in the "Memorandum of Agreement between the Department of Toxic Substances Control, the State Water Resources Control Board, and the California Environmental Protection Agency for Oversight and Investigation and Cleanup Activities at Brownfield Sites", dated March 1, 2005. This application must summarize available site information, including soil, soil vapor, and ground water sampling results, planned land uses, and a conceptual management plan to be implemented as part of the planned development. The selected oversight agency shall determine whether remediation is required to address residual contamination in soil, soil vapor, and/or ground water on the site. All requirements of the oversight agency shall be followed, and any remediation activities shall be completed in accordance with all applicable Federal, state, and local regulations.

If soil remediation is needed, it would likely consist of soil excavation, soil encapsulation, and/or capping of the soil with non-contaminated soil. Remediation, if any, shall be performed by a licensed hazardous waste remediation contractor under the oversight of a professional engineer or registered geologist.

MITIGATION MEASURE HAZ-2: Locating and removing the sources of contamination beneath each development site would not be feasible because some of the VOCs in the ground water beneath the sites originate offsite. Therefore, the developers will likely be required by the oversight regulatory agency to construct an asphalt-based spray used to create an impermeable membrane, beneath each of the residences on the site to ensure VOCs do not affect the inhabitants of the proposed residences. Additional detail regarding such systems is provided in Appendix E of this report.

MITIGATION MEASURE HAZ-3: A hazardous materials licensed contractor shall conduct construction earthwork activities with properly trained employees in areas where contaminated soil or ground water exceed residential screening levels. Employees conducting earthwork activities at the site must complete a 40-hour training course, including respirator and personal protective equipment training. Each contractor working at the site shall prepare a health and safety plan (HSP) that addresses the safety and health hazards of each phase of site operations that includes the requirements and procedures for employee protection.

MITIGATION MEASURE HAZ-4: Cleanup and remediation of the site will be required to meet all applicable Federal, state, and local regulations.

MITIGATION MEASURE HAZ-5: Excavated soils will be characterized prior to off-site disposal or reuse on-site. Appropriate soil characterization, storage, transportation, and disposal procedures shall be followed. Contaminated soils shall be disposed of at a licensed facility.

MITIGATION MEASURE HAZ-6: Any remaining storage tanks on the site shall be properly closed and removed according to the City of Sunnyvale Department of Public Safety standards prior to development. Any remaining wells on the site shall be properly closed and removed/abandoned in accordance with the Santa Clara Valley Water District's procedures and requirements.

Asbestos Containing Materials and Lead-Based Paint

MITIGATION MEASURE HAZ-7: As mentioned previously, ACBMs and lead-based paint may be present in the existing buildings on the site. The National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines require that all potentially friable ACBMs be removed prior to building demolition or renovation that may disturb ACBMs. Each proposed development project on the site shall conform to the standard requirements described in the *Impacts* discussion above for avoiding impacts associated with ACBMs.

Disturbance of Other Materials During Demolition and Construction

Demolition of the existing structures and facilities on the site could result in the upset or accidental release of hazardous materials. Conformance with the following mitigation measures will reduce health risks associated with the residual presence of these materials at the site:

MITIGATION MEASURE HAZ-8: Prior to demolition and redevelopment of properties with industrial buildings, the chemical storage and use history shall be researched for each facility and the closure requirements by local regulatory agencies (*i.e.*, City of Sunnyvale Department of Public Safety) shall be met.

MITIGATION MEASURE HAZ-9: During site demolition, care shall be taken when removing the various sump and underground structures located across the property. Soil and sludge contaminated above acceptable regulatory guidelines shall be appropriately disposed off-site at a licensed facility.

MITIGATION MEASURE HAZ-10: Fluorescent lights present in the buildings on the site shall be disposed at an appropriate recycling facility. In addition, other mercury-containing products, such as heating-ventilation and air conditioning (HVAC) system thermostats, pilot light sensors, and other mercury-containing electrical components and switches, shall be properly handled and disposed at an appropriate facility.

MITIGATION MEASURE HAZ-11: The project applicant shall submit plans showing the existing wells on the site to the selected oversight agency for review and approval before demolition of the existing buildings. The existing wells on the site shall be abandoned in accordance with the Santa Clara Valley Water District standards and procedures.

MITIGATION MEASURE HAZ-12: A qualified environmental professional shall be present during demolition and stripping of the site, to identify possible soil contamination and hazards.

2.5.4.3 Avoidance Measures for Future Development on the Site

Any future redevelopment on the site under the proposed ITR designation, would include the following avoidance measures to further reduce hazards and hazardous materials impacts:

AVOIDANCE MEASURE HAZ-1: If future uses on the ITR site involve the use, storage, transport, or disposal of hazardous materials, the site operator will be required to comply with Federal, State, and local requirements for managing hazardous materials. Depending on the type and quantity of hazardous materials, these requirements could include the preparation of, implementation of, and training in the plans, programs, and permits, described under *Programmed Mitigation Measures* above.

AVOIDANCE MEASURE HAZ-2: Prior to approval of any new industrial uses or expansions of existing industrial uses on the ITR site, the City of Sunnyvale shall require the applicant(s) to complete a modeling release scenario analysis for any compressed toxic gas or materials that may produce a toxic gas that the facility proposes to use. This modeling analysis shall be completed to the satisfaction of the Director of Community Development and the Department of Public Safety, and shall be completed prior to issuance of building or occupancy permits. The City of Sunnyvale Department of Public Safety will review this analysis and may require additional measures, such as additional containment, warning systems, or evacuation plans, if appropriate, to reduce potential off-site releases from impacting nearby sensitive populations.

AVOIDANCE MEASURE HAZ-3: The industrial nature of the site and surrounding area shall be disclosed to potential buyers of all future residential units on the site, as part of all purchase/disclosure documents and homeowners' association documents.

2.5.5 Conclusion

HAZ-1: The construction of residential uses on the site could result in the exposure of an additional population of sensitive receptors to hazardous materials impacts in the event of an accidental release or upset. However, various local, State, and Federal laws, regulations, and ordinances require sufficient engineering controls to help prevent chemical releases, and in the event of a release, to help protect human health and the environment. The implementation and enforcement of these regulations regarding the use, storage, transport, and disposal of hazardous materials will reduce the potential for impacts to existing and future residents and school children. In addition, prior to the approval of any new industrial uses, or expansions of existing industrial uses, on the ITR site, the City of Sunnyvale will require the applicant(s) to complete a modeling release scenario analysis for any compressed toxic gas or material that may produce a toxic gas that the facility proposes to use, and to implement additional measures as appropriate to reduce potential impacts to sensitive populations. **(Less Than Significant Impact)**

HAZ-2: With the implementation of the above mitigation measure, the redevelopment of the project site with residential uses would not result in significant hazards or hazardous materials impacts from residual concentrations of chemicals of particular concern present in the soils and groundwater on the site. **(Less Than Significant Impact with Mitigation Incorporated)**

HAZ-3: The proposed project, with the implementation of the above standard measures, would not result in significant impacts related to the presence of ACBMs or lead-based paint. **(Less Than Significant Impact with Mitigation Incorporated)**

HAZ-4: The proposed project, with the implementation of the above standard measures, would not result in significant impacts during demolition of the existing structures and facilities on the site. **(Less Than Significant Impact with Mitigation Incorporated)**

HAZ-5: The proposed project would not result in safety hazards or impacts related to wildfires or from an increase in the on-site use and/or storage of hazardous materials. **(Less Than Significant Impact)**